

Algebra I Regents Bimodal Worksheets

- 1 Olivia entered a baking contest. As part of the contest, she needs to demonstrate how to measure a gallon of milk if she only has a teaspoon measure. She converts the measurement using the ratios below:

$$\frac{4 \text{ quarts}}{1 \text{ gallon}} \cdot \frac{2 \text{ pints}}{1 \text{ quart}} \cdot \frac{2 \text{ cups}}{1 \text{ pint}} \cdot \frac{\frac{1}{4} \text{ cup}}{4 \text{ tablespoons}} \cdot \frac{3 \text{ teaspoons}}{1 \text{ tablespoon}}$$

Which ratio is *incorrectly* written in Olivia's conversion?

- 2 At Berkeley Central High School, a survey was conducted to see if students preferred cheeseburgers, pizza, or hot dogs for lunch. The results of this survey are shown in the table below.

	Cheeseburgers	Pizza	Hot Dogs
Females	32	44	24
Males	36	30	34

Based on this survey, what percent of the students preferred pizza?

- 3 A middle school conducted a survey of students to determine if they spent more of their time playing games or watching videos on their tablets. The results are shown in the table below.

	Playing Games	Watching Videos	Total
Boys	138	46	184
Girls	54	142	196
Total	192	188	380

Of the students who spent more time playing games on their tablets, approximately what percent were boys?

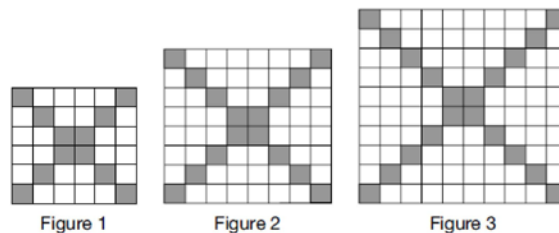
- 4 Lizzy has 30 coins that total \$4.80. All of her coins are dimes, D , and quarters, Q . Which system of equations models this situation?
- 5 Skyler mows lawns in the summer. The function $f(x)$ is used to model the amount of money earned, where x is the number of lawns completely mowed. A reasonable domain for this function would be
- 6 Peter has \$100 to spend on drinks for his party. Bottles of lemonade cost \$2 each, and juice boxes cost \$0.50 each. If x is the number of bottles of lemonade and y is the number of juice boxes, which inequality models this situation?
- 7 The range of $f(x) = x^2 + 2x - 5$ is the set of all real numbers

- 8 A survey was given to 12th-grade students of West High School to determine the location for the senior class trip. The results are shown in the table below.

	Niagara Falls	Darien Lake	New York City
Boys	56	74	103
Girls	71	92	88

To the *nearest percent*, what percent of the boys chose Niagara Falls?

- 9 What is the sum of $3x\sqrt{7}$ and $2x\sqrt{7}$?
- 10 The domain of the function $f(x) = x^2 + x - 12$ is
- 11 At an ice cream shop, the profit, $P(c)$, is modeled by the function $P(c) = 0.87c$, where c represents the number of ice cream cones sold. An appropriate domain for this function is
- 12 Caitlin graphs the function $f(x) = ax^2$, where a is a positive integer. If Caitlin multiplies a by -2 , when compared to $f(x)$, the new graph will become
- 13 If point $(K, -5)$ lies on the line whose equation is $3x + y = 7$, then the value of K is
- 14 The amount of energy, Q , in joules, needed to raise the temperature of m grams of a substance is given by the formula $Q = mC(T_f - T_i)$, where C is the specific heat capacity of the substance. If its initial temperature is T_i , an equation to find its final temperature, T_f , is
- 15 The zeros of the function $p(x) = x^2 - 2x - 24$ are
- 16 Students were asked to write $2x^3 + 3x + 4x^2 + 1$ in standard form. Four student responses are shown below.
Alexa: $4x^2 + 3x + 2x^3 + 1$
Carol: $2x^3 + 3x + 4x^2 + 1$
Ryan: $2x^3 + 4x^2 + 3x + 1$
Eric: $1 + 2x^3 + 3x + 4x^2$
Which student's response is correct?
- 17 When solving $p^2 + 5 = 8p - 7$, Kate wrote $p^2 + 12 = 8p$. The property she used is
- 18 The shaded boxes in the figures below represent a sequence.



If figure 1 represents the first term and this pattern continues, how many shaded blocks will be in figure 35?

- 19 Given the set $\{x | -2 \leq x \leq 2$, where x is an integer $\}$, what is the solution of $-2(x - 5) < 10$?

- 20 The Utica Boilermaker is a 15-kilometer road race. Sara is signed up to run this race and has done the following training runs:

- I. 10 miles
- II. 44,880 feet
- III. 15,560 yards

Which run(s) are at least 15 kilometers?

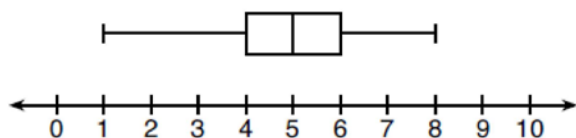
- 21 What is an equation of the line that passes through the points $(2, 7)$ and $(-1, 3)$?

- 22 The value of x that satisfies the equation

$$\frac{4}{3} = \frac{x + 10}{15}$$
 is

- 23 When $3a + 7b > 2a - 8b$ is solved for a , the result is

- 24 What is the range of the box plot shown below?



- 25 A dolphin jumps out of the water and then back into the water. His jump could be graphed on a set of axes where x represents time and y represents distance above or below sea level. The domain for this graph is best represented using a set of

- 26 Mike uses the equation $b = 1300(2.65)^x$ to determine the growth of bacteria in a laboratory setting. The exponent represents

- 27 The formula $Ax + By = C$ represents the equation of a line in standard form. Which expression represents y in terms of A , B , C , and x ?

- 28 If the original function $f(x) = 2x^2 - 1$ is shifted to the left 3 units to make the function $g(x)$, which expression would represent $g(x)$?

- 29 Students were asked to write $6x^5 + 8x - 3x^3 + 7x^7$ in standard form. Shown below are four student responses.

Anne: $7x^7 + 6x^5 - 3x^3 + 8x$

Bob: $-3x^3 + 6x^5 + 7x^7 + 8x$

Carrie: $8x + 7x^7 + 6x^5 - 3x^3$

Dylan: $8x - 3x^3 + 6x^5 + 7x^7$

Which student is correct?

- 30 Which interval represents the range of the function $h(x) = 2x^2 - 2x - 4$?

- 31 Nicci's sister is 7 years less than twice Nicci's age, a . The sum of Nicci's age and her sister's age is 41. Which equation represents this relationship?

- 32 The length, width, and height of a rectangular box are represented by $2x$, $3x + 1$, and $5x - 6$, respectively. When the volume is expressed as a polynomial in standard form, what is the coefficient of the 2nd term?

- 33 The function f is shown in the table below.

x	$f(x)$
0	1
1	3
2	9
3	27

Which type of function best models the given data?

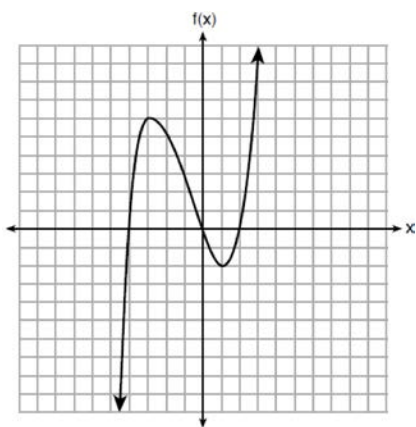
- 34 The expression $4x^2 - 25$ is equivalent to
- 35 Morgan read that a snail moves about 72 feet per day. He performs the calculation $\frac{72 \text{ feet}}{1 \text{ day}} \cdot \frac{1 \text{ day}}{24 \text{ hours}} \cdot \frac{1 \text{ hour}}{60 \text{ minutes}} \cdot \frac{12 \text{ inches}}{1 \text{ foot}}$ to convert this rate to different units. What are the units for the converted rate?
- 36 The quadratic equation $x^2 - 6x = 12$ is rewritten in the form $(x + p)^2 = q$, where q is a constant. What is the value of p ?
- 37 The height of a ball Doreen tossed into the air can be modeled by the function $h(x) = -4.9x^2 + 6x + 5$, where x is the time elapsed in seconds, and $h(x)$ is the height in meters. The number 5 in the function represents
- 38 Bamboo plants can grow 91 centimeters per day. What is the approximate growth of the plant, in inches per hour?
- 39 What are the zeros of $m(x) = x(x^2 - 16)$?
- 40 The expression $3(x + 4) - (2x + 7)$ is equivalent to
- 41 If the parent function of $f(x)$ is $p(x) = x^2$, then the graph of the function $f(x) = (x - k)^2 + 5$, where $k > 0$, would be a shift of
- 42 When the function $g(x) = \begin{cases} 5x, & x \leq 3 \\ x^2 + 4, & x > 3 \end{cases}$ is graphed correctly, how should the points be drawn on the graph for an x -value of 3?
- 43 In a geometric sequence, the first term is 4 and the common ratio is -3 . The fifth term of this sequence is
- 44 Which of the three situations given below is best modeled by an exponential function?
I. A bacteria culture doubles in size every day.
II. A plant grows by 1 inch every 4 days.
III. The population of a town declines by 5% every 3 years.
- 45 The expression $16x^2 - 81$ is equivalent to

- 46 The following table shows the heights, in inches, of the players on the opening-night roster of the 2015-2016 New York Knicks.

84	80	87	75	77	79	80	74	76	80	80	82	82
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The population standard deviation of these data is approximately

- 47 The graph of $f(x)$ is shown below.



What is the value of $f(-3)$?

- 48 If $f(x) = x^2 + 2x + 1$ and $g(x) = 7x - 5$, for which values of x is $f(x) = g(x)$?

- 49 Joe has dimes and nickels in his piggy bank totaling \$1.45. The number of nickels he has is 5 more than twice the number of dimes, d . Which equation could be used to find the number of dimes he has?

- 50 When the equation $\frac{x-1}{2} - \frac{a}{4} = \frac{3a}{4}$ is solved for x in terms of a , the solution is

- 51 Which equation is equivalent to $y = x^2 + 24x - 18$?

- 52 Each day, a local dog shelter spends an average of \$2.40 on food per dog. The manager estimates the shelter's daily expenses, assuming there is at least one dog in the shelter, using the function $E(x) = 30 + 2.40x$. Which statements regarding the function $E(x)$ are correct?

- I. x represents the number of dogs at the shelter per day.
- II. x represents the number of volunteers at the shelter per day.
- III. 30 represents the shelter's total expenses per day.
- IV. 30 represents the shelter's nonfood expenses per day.

- 53 If $g(x) = -x^2 - x + 5$, then $g(-4)$ is equal to

- 54 Emily was given \$600 for her high school graduation. She invested it in an account that earns 2.4% interest per year. If she does *not* make any deposits or withdrawals, which expression can be used to determine the amount of money that will be in the account after 4 years?

- 55 When $3x^2 + 7x - 6 + 2x^3$ is written in standard form, the leading coefficient is

- 56 A movie theater's popcorn box is a rectangular prism with a base that measures 6 inches by 4 inches and has a height of 8 inches. To create a larger box, both the length and the width will be increased by x inches. The height will remain the same. Which function represents the volume, $V(x)$, of the larger box?
- 57 The function $g(x)$ is defined as $g(x) = -2x^2 + 3x$. The value of $g(-3)$ is
- 58 A store manager is trying to determine if they should continue to sell a particular brand of nails. To model their profit, they use the function $p(n)$, where n is the number of boxes of these nails sold in a day. A reasonable domain for this function would be
- 59 The formula for electrical power, P , is $P = I^2 R$, where I is current and R is resistance. The formula for I in terms of P and R is
- 60 Which domain is most appropriate for a function that represents the number of items, $f(x)$, placed into a laundry basket each day, x , for the month of January?
- 61 If $x \neq 0$, then the common ratio of the sequence $x, 2x^2, 4x^3, 8x^4, 16x^5, \dots$ is
- 62 The function $f(x) = |x|$ is multiplied by k to create the new function $g(x) = k|x|$. Which statement is true about the graphs of $f(x)$ and $g(x)$ if $k = \frac{1}{2}$?
- 63 Three expressions are shown below.
I. $(x^3)^3$
II. $x^4 \bullet x^5$
III. $x^{10} \bullet x^{-1}$
Which expressions are equivalent for all positive values of x ?
- 64 When written in standard form, the product of $(3 + x)$ and $(2x - 5)$ is
- 65 What are the solutions to the equation $3(x - 4)^2 = 27$?
- 66 A population of bacteria can be modeled by the function $f(t) = 1000(0.98)^t$, where t represents the time since the population started decaying, and $f(t)$ represents the population of the remaining bacteria at time t . What is the rate of decay for this population?
- 67 If $f(x) = 4x + 5$, what is the value of $f(-3)$?
- 68 Joe compared gas prices in England and New York State one day. In England, gas sold for 1.35 euros per liter, and one dollar equaled 0.622 euros. A correct way to figure out this cost, in dollars per gallon, is
- 69 Joy wants to buy strawberries and raspberries to bring to a party. Strawberries cost \$1.60 per pound and raspberries cost \$1.75 per pound. If she only has \$10 to spend on berries, which inequality represents the situation where she buys x pounds of strawberries and y pounds of raspberries?

70 Three quadratic functions are given below.

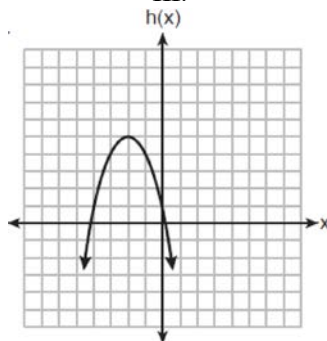
I.

$$f(x) = (x + 2)^2 + 5$$

II.

x	-4	-3	-2	-1	0	1
g(x)	-3	2	5	5	2	-3

III.



Which of these functions have the same vertex?

71 The solution to $3(x - 8) + 4x = 8x + 4$ is

72 Last weekend, Emma sold lemonade at a yard sale. The function $P(c) = .50c - 9.96$ represented the profit, $P(c)$, Emma earned selling c cups of lemonade. Sales were strong, so she raised the price for this weekend by 25 cents per cup. Which function represents her profit for this weekend?

73 The value of x which makes $\frac{2}{3} \left(\frac{1}{4}x - 2 \right) = \frac{1}{5} \left(\frac{4}{3}x - 1 \right)$ true is

74 Which expression is equivalent to $2(x^2 - 1) + 3x(x - 4)$?

75 The formula for the area of a trapezoid is

$A = \frac{1}{2}(b_1 + b_2)h$. The height, h , of the trapezoid may be expressed as

76 Which polynomial is twice the sum of $4x^2 - x + 1$ and $-6x^2 + x - 4$?

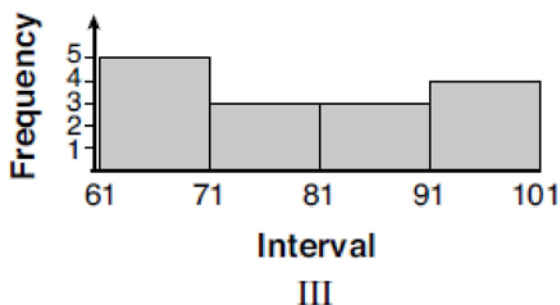
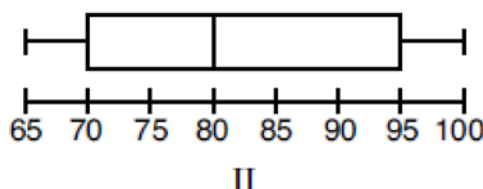
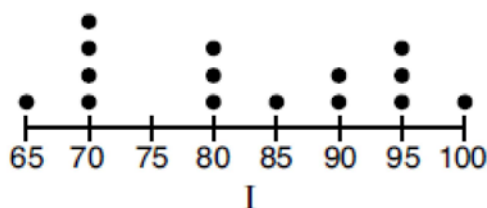
77 If the function $f(x) = x^2$ has the domain $\{0, 1, 4, 9\}$, what is its range?

78 The amount Mike gets paid weekly can be represented by the expression $2.50a + 290$, where a is the number of cell phone accessories he sells that week. What is the constant term in this expression and what does it represent?

- 79 Given the following data set:

65, 70, 70, 70, 70, 80, 80, 80, 85, 90, 90, 95, 95, 95, 100

Which representations are correct for this data set?



- 80 A laboratory technician used the function $t(m) = 2(3)^{2m+1}$ to model her research. Consider the following expressions:

I. $6(3)^{2m}$ II. $6(6)^{2m}$ III. $6(9)^m$

The function $t(m)$ is equivalent to

- 81 What is the solution to $2 + 3(2a + 1) = 3(a + 2)$?

- 82 Which value of x makes $\frac{x-3}{4} + \frac{2}{3} = \frac{17}{12}$ true?

- 83 A high school club is researching a tour package offered by the Island Kayak Company. The company charges \$35 per person and \$245 for the tour guide. Which function represents the total cost, $C(x)$, of this kayak tour package for x club members?

- 84 An ice cream shop sells ice cream cones, c , and milkshakes, m . Each ice cream cone costs \$1.50 and each milkshake costs \$2.00. Donna has \$19.00 to spend on ice cream cones and milkshakes. If she must buy 5 ice cream cones, which inequality could be used to determine the maximum number of milkshakes she can buy?

- 85 Ian is saving up to buy a new baseball glove. Every month he puts \$10 into a jar. Which type of function best models the total amount of money in the jar after a given number of months?

- 86 An outdoor club conducted a survey of its members. The members were asked to state their preference between skiing and snowboarding. Each member had to pick one. Of the 60 males, 45 stated they preferred to snowboard. Twenty-two of the 60 females preferred to ski. What is the relative frequency that a male prefers to ski?

- 87 How many real-number solutions does $4x^2 + 2x + 5 = 0$ have?

- 88 The expression $\frac{1}{3}x(6x^2 - 3x + 9)$ is equivalent to

- 89 Mrs. Allard asked her students to identify which of the polynomials below are in standard form and explain why.

I. $15x^4 - 6x + 3x^2 - 1$

II. $12x^3 + 8x + 4$

III. $2x^5 + 8x^2 + 10x$

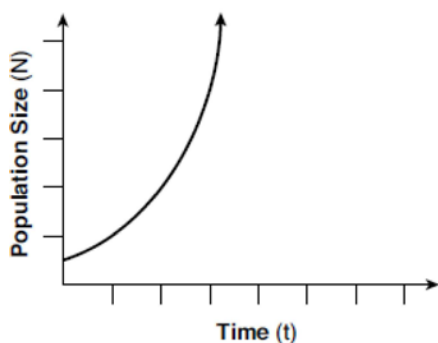
Which student's response is correct?

- 90 A ball is thrown into the air from the top of a building. The height, $h(t)$, of the ball above the ground t seconds after it is thrown can be modeled by $h(t) = -16t^2 + 64t + 80$. How many seconds after being thrown will the ball hit the ground?

- 91 The expression $3(x^2 + 2x - 3) - 4(4x^2 - 7x + 5)$ is equivalent to

- 92 David correctly factored the expression $m^2 - 12m - 64$. Which expression did he write?

- 93 Which type of function is shown in the graph below?



- 94 If $k(x) = 2x^2 - 3\sqrt{x}$, then $k(9)$ is

- 95 Compared to the graph of $f(x) = x^2$, the graph of $g(x) = (x - 2)^2 + 3$ is the result of translating $f(x)$

- 96 Given: the sequence 4, 7, 10, 13, ...
When using the arithmetic sequence formula $a_n = a_1 + (n - 1)d$ to determine the 10th term, which variable would be replaced with the number 3?

- 97 Given the following three sequences:

I. 2, 4, 6, 8, 10, ...

II. 2, 4, 8, 16, 32, ...

III. $a, a + 2, a + 4, a + 6, a + 8, \dots$

Which ones are arithmetic sequences?

- 98 When solving the equation $12x^2 - 7x = 6 - 2(x^2 - 1)$, Evan wrote $12x^2 - 7x = 6 - 2x^2 + 2$ as his first step. Which property justifies this step?

- 99 Given $f(x) = -3x^2 + 10$, what is the value of $f(-2)$?

- 100 The value of Tony's investment was \$1140 on January 1st. On this date three years later, his investment was worth \$1824. The average rate of change for this investment was \$19 per

- 101 A company ships an average of 30,000 items each week. The approximate number of items shipped each minute is calculated using the conversion

- 102 What is the degree of the polynomial $2x + x^3 + 5x^2$?

- 103 Thirty-two teams are participating in a basketball tournament. Only the winning teams in each round advance to the next round, as shown in the table below.

Number of Rounds Completed, x	0	1	2	3	4	5
Number of Teams Remaining, $f(x)$	32	16	8	4	2	1

Which function type best models the relationship between the number of rounds completed and the number of teams remaining?

- 104 A swimmer set a world record in the women's 1500-meter freestyle, finishing the race in 15.42 minutes. If 1 meter is approximately 3.281 feet, which set of calculations could be used to convert her speed to miles per hour?
- 105 During summer vacation, Ben decides to sell hot dogs and pretzels on a food cart in Manhattan. It costs Ben \$0.50 for each hot dog and \$0.40 for each pretzel. He has only \$100 to spend each day on hot dogs and pretzels. He wants to sell at least 200 items each day. If h is the number of hot dogs and p is the number of pretzels, which inequality would be part of a system of inequalities used to determine the total number of hot dogs and pretzels Ben can sell?
- 106 The 24th term of the sequence $-5, -11, -17, -23, \dots$ is
- 107 The expression $-4.9t^2 + 50t + 2$ represents the height, in meters, of a toy rocket t seconds after launch. The initial height of the rocket, in meters, is
- 108 What is the equation of the line that passes through the point $(6, -3)$ and has a slope of $-\frac{4}{3}$?
- 109 The following conversion was done correctly:

$$\frac{3 \text{ miles}}{1 \text{ hour}} \cdot \frac{1 \text{ hour}}{60 \text{ minutes}} \cdot \frac{5280 \text{ feet}}{1 \text{ mile}} \cdot \frac{12 \text{ inches}}{1 \text{ foot}}$$
 What were the final units for this conversion?
- 110 Students were asked to write a formula for the length of a rectangle by using the formula for its perimeter, $p = 2\ell + 2w$. Three of their responses are shown below.
 I. $\ell = \frac{1}{2}p - w$
 II. $\ell = \frac{1}{2}(p - 2w)$
 III. $\ell = \frac{p - 2w}{2}$
 Which responses are correct?
- 111 Alicia purchased H half-gallons of ice cream for \$3.50 each and P packages of ice cream cones for \$2.50 each. She purchased 14 items and spent \$43. Which system of equations could be used to determine how many of each item Alicia purchased?
- 112 Eric deposits \$500 in a bank account that pays 3.5% interest, compounded yearly. Which type of function should he use to determine how much money he will have in the account at the end of 10 years?

- 113 Some adults were surveyed to find out if they would prefer to buy a sports utility vehicle (SUV) or a sports car. The results of the survey are summarized in the table below.

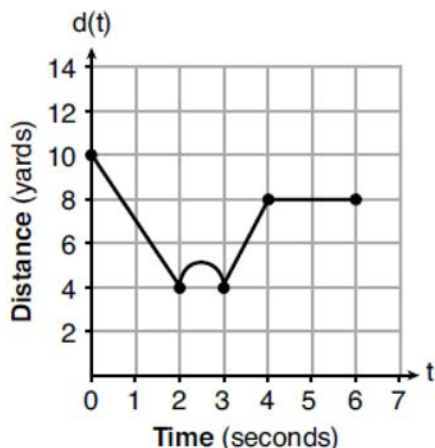
	SUV	Sports Car	Totals
Male	21	38	59
Female	135	46	181
Totals	156	84	240

Of the number of adults that preferred sports cars, approximately what percent were males?

- 114 What is the value of x in the equation

$$\frac{5(2x-4)}{3} + 9 = 14?$$

- 115 A child is playing outside. The graph below shows the child's distance, $d(t)$, in yards from home over a period of time, t , in seconds.

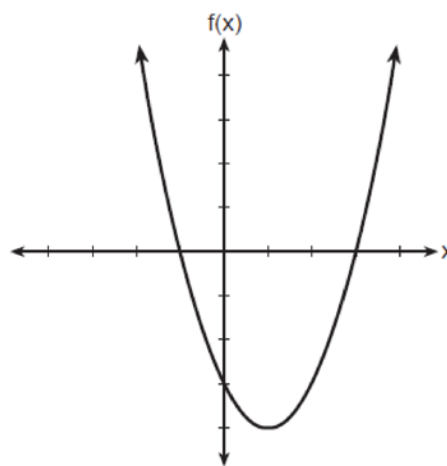


Which interval represents the child constantly moving closer to home?

- 116 If $f(x) = x^2 + 2$, which interval describes the range of this function?

- 117 The solution to $4p + 2 < 2(p + 5)$ is

- 118 The function f is graphed on the set of axes below.



What is a possible factorization of this function?

- 119 Sarah travels on her bicycle at a speed of 22.7 miles per hour. What is Sarah's approximate speed, in kilometers per minute?

- 120 The expression $(5x^2 - x + 4) - 3(x^2 - x - 2)$ is equivalent to

- 121 Josh graphed the function $f(x) = -3(x - 1)^2 + 2$. He then graphed the function $g(x) = -3(x - 1)^2 - 5$ on the same coordinate plane. The vertex of $g(x)$ is

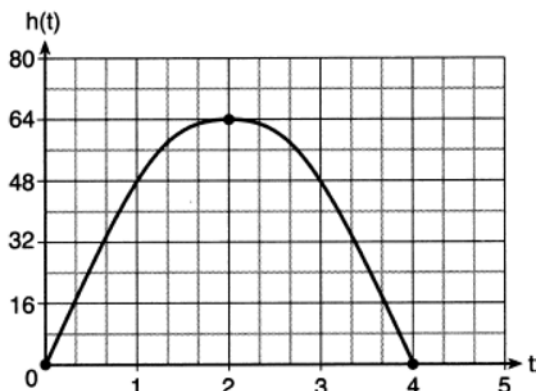
- 122 The quadratic functions $r(x)$ and $q(x)$ are given below.

x	$r(x)$
-4	-12
-3	-15
-2	-16
-1	-15
0	-12
1	7

$$q(x) = x^2 + 2x - 8$$

The function with the *smaller* minimum value is

- 123 The diagram below shows the graph of $h(t)$, which models the height, in feet, of a rocket t seconds after it was shot into the air.

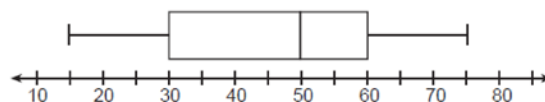


The domain of $h(t)$ is

- 126 The function $G(m)$ represents the amount of gasoline consumed by a car traveling m miles. An appropriate domain for this function would be

- 127 A grocery store sells packages of beef. The function $C(w)$ represents the cost, in dollars, of a package of beef weighing w pounds. The most appropriate domain for this function would be

- 128 A box plot is shown below.



Which number represents the third quartile?

- 124 The function $f(x) = 2x^2 + 6x - 12$ has a domain consisting of the integers from -2 to 1 , inclusive. Which set represents the corresponding range values for $f(x)$?

- 129 What is the solution to the inequality below?

$$4 - \frac{2}{5}x \geq \frac{1}{3}x + 15$$

- 125 If $f(x) = 2(3^x) + 1$, what is the value of $f(2)$?

- 130 What is the product of $(2x + 7)$ and $(x - 3)$?

131 Given: $f(x) = \frac{2}{3}x - 4$ and $g(x) = \frac{1}{4}x + 1$

Four statements about this system are written below.

- I. $f(4) = g(4)$
- II. When $x = 12$, $f(x) = g(x)$.
- III. The graphs of $f(x)$ and $g(x)$ intersect at $(12, 4)$.
- IV. The graphs of $f(x)$ and $g(x)$ intersect at $(4, 12)$.

Which statement(s) are true?

- 132 Ashley only has 7 quarters and some dimes in her purse. She needs at least \$3.00 to pay for lunch. Which inequality could be used to determine the number of dimes, d , she needs in her purse to be able to pay for lunch?

- 133 On the main floor of the Kodak Hall at the Eastman Theater, the number of seats per row increases at a constant rate. Steven counts 31 seats in row 3 and 37 seats in row 6. How many seats are there in row 20?

- 134 In the process of solving the equation $10x^2 - 12x - 16x = 6$, George wrote $2(5x^2 - 14x) = 2(3)$, followed by $5x^2 - 14x = 3$.

Which properties justify George's process?

- A. addition property of equality
- B. division property of equality
- C. commutative property of addition
- D. distributive property

- 135 Ian throws a ball up in the air and lets it fall to the ground. The height of the ball, $h(t)$, is modeled by the equation $h(t) = -16t^2 + 6t + 3$, with $h(t)$ measured in feet, and time, t , measured in seconds. The number 3 in $h(t)$ represents

- 136 One Saturday afternoon, three friends decided to keep track of the number of text messages they received each hour from 8 a.m. to noon. The results are shown below.
Emily said that the number of messages she received increased by 8 each hour.
Jessica said that the number of messages she received doubled every hour.
Chris said that he received 3 messages the first hour, 10 the second hour, none the third hour, and 15 the last hour.
Which of the friends' responses best classifies the number of messages they received each hour as a linear function?

- 137 Britney is solving a quadratic equation. Her first step is shown below.

Problem: $3x^2 - 8 - 10x = 3(2x + 3)$

Step 1: $3x^2 - 10x - 8 = 6x + 9$

Which two properties did Britney use to get to step 1?

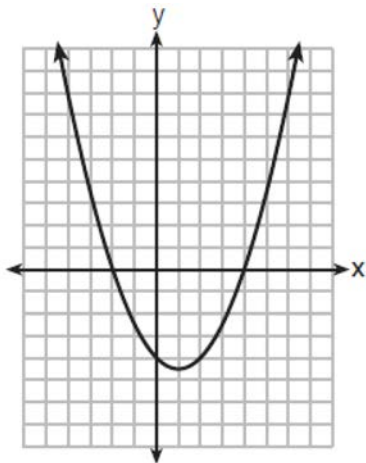
- I. addition property of equality
- II. commutative property of addition
- III. multiplication property of equality
- IV. distributive property of multiplication over addition

- 138 A function is defined as $K(x) = 2x^2 - 5x + 3$. The value of $K(-3)$ is

- 139 For the sequence $-27, -12, 3, 18, \dots$, the expression that defines the n th term where $a_1 = -27$ is

- 140 A high school sponsored a badminton tournament. After each round, one-half of the players were eliminated. If there were 64 players at the start of the tournament, which equation models the number of players left after 3 rounds?

- 141 The graph of $y = \frac{1}{2}x^2 - x - 4$ is shown below. The points $A(-2,0)$, $B(0,-4)$, and $C(4,0)$ lie on this graph.

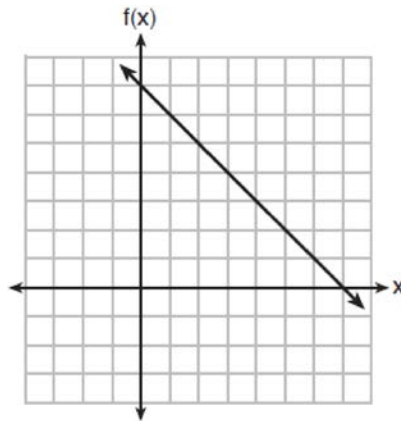


Which of these points can determine the zeros of the equation $y = \frac{1}{2}x^2 - x - 4$?

- 142 What would be the order of these quadratic functions when they are arranged from the narrowest graph to the widest graph?
 $f(x) = -5x^2$ $g(x) = 0.5x^2$ $h(x) = 3x^2$
- 143 The solutions to $(x + 4)^2 - 2 = 7$ are
- 144 Which domain would be the most appropriate to use for a function that compares the number of emails sent (x) to the amount of data used for a cell phone plan (y)?
- 145 What is the constant term of the polynomial $4d + 6 + 3d^2$?

- 146 The expression $(m - 3)^2$ is equivalent to
- 147 What is the solution to $-3(x - 6) > 2x - 2$?
- 148 The expression $(3x^2 + 4x - 8) + 2(11 - 5x)$ is equivalent to
- 149 The length of a rectangular flat-screen television is six inches less than twice its width, x . If the area of the television screen is 1100 square inches, which equation can be used to determine the width, in inches?
- 150 Sunny purchases a new car for \$29,873. The car depreciates 20% annually. Which expression can be used to determine the value of the car after t years?
- 151 When written in factored form, $4w^2 - 11w - 3$ is equivalent to
- 152 The box plot below summarizes the data for the average monthly high temperatures in degrees Fahrenheit for Orlando, Florida.
-
- The third quartile is
- 153 What are the zeros of $f(x) = (2x - 4)(3x + 4)$?

154 The functions $f(x)$, $q(x)$, and $p(x)$ are shown below.

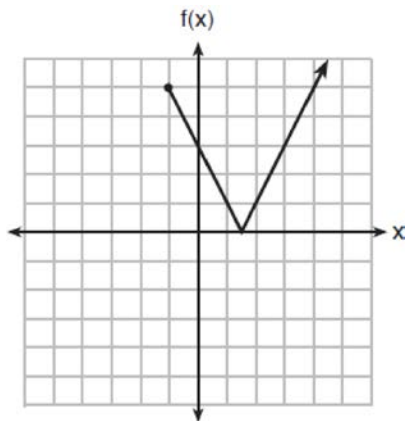


$$q(x) = (x - 1)^2 - 6$$

x	$p(x)$
2	5
3	4
4	3
5	4
6	5

When the input is 4, which functions have the same output value?

155 The function $f(x)$ is graphed below.



The domain of this function is

156 The expression $36x^2 - 9$ is equivalent to

157 The math department needs to buy new textbooks and laptops for the computer science classroom. The textbooks cost \$116.00 each, and the laptops cost \$439.00 each. If the math department has \$6500 to spend and purchases 30 textbooks, how many laptops can they buy?

158 What is the solution to the equation

$$\frac{3}{5} \left(x + \frac{4}{3} \right) = 1.04?$$

- 159 Jenna took a survey of her senior class to see whether they preferred pizza or burgers. The results are summarized in the table below.

	Pizza	Burgers
Male	23	42
Female	31	26

Of the people who preferred burgers, approximately what percentage were female?

- 160 Students were asked to name their favorite sport from a list of basketball, soccer, or tennis. The results are shown in the table below.

	Basketball	Soccer	Tennis
Girls	42	58	20
Boys	84	41	5

What percentage of the students chose soccer as their favorite sport?

- 161 Materials A and B decay over time. The function for the amount of material A is $A(t) = 1000(0.5)^{2t}$ and for the amount of material B is $B(t) = 1000(0.25)^t$, where t represents time in days. On which day will the amounts of material be equal?

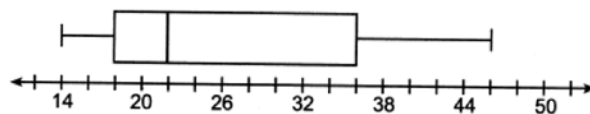
- 165 The roots of $x^2 - 5x - 4 = 0$ are

- 166 The solution to $-2(1 - 4x) = 3x + 8$ is

- 167 What is the solution to $\frac{3}{2}b + 5 < 17$?

- 162 The first term in a sequence is 5 and the fifth term is 17. What is the common difference?

- 168 What is the value of the third quartile in the box plot shown below?

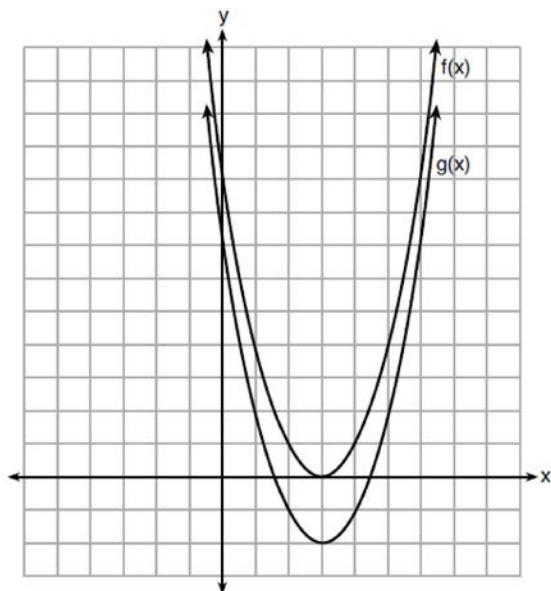


- 163 If $C = 2a^2 - 5$ and $D = 3 - a$, then $C - 2D$ equals

- 164 At Benny's Cafe, a mixed-greens salad costs \$5.75. Additional toppings can be added for \$0.75 each. Which function could be used to determine the cost, $c(s)$, in dollars, of a salad with s additional toppings?

- 169 If the domain of the function $f(x) = 2x^2 - 8$ is $\{-2, 3, 5\}$, then the range is

- 170 The functions $f(x) = x^2 - 6x + 9$ and $g(x) = f(x) + k$ are graphed below.



Which value of k would result in the graph of $g(x)$?

- 171 Jim uses the equation $A = P(1 + 0.05)^t$ to find the amount of money in an account, A , of an investment, P , after t years. For this equation, which phrase describes the yearly rate of change?
- 172 Bryan's hockey team is purchasing jerseys. The company charges \$250 for a onetime set-up fee and \$23 for each printed jersey. Which expression represents the total cost of x number of jerseys for the team?
- 173 Which of the equations below have the same solution?
- I. $10(x - 5) = -15$
 - II. $4 + 2(x - 2) = 9$
 - III. $\frac{1}{3}x = \frac{3}{2}$

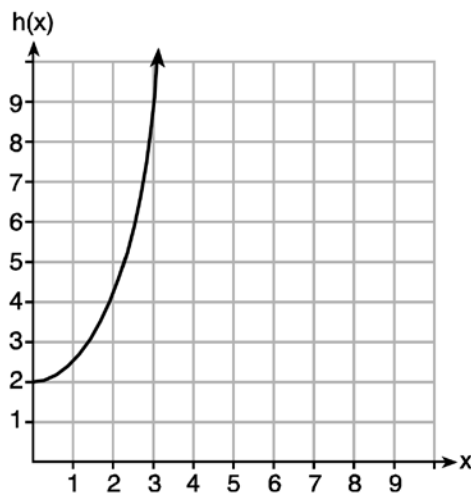
- 174 Given: $f(x) = (x - 2)^2 + 4$
 $g(x) = (x - 5)^2 + 4$
When compared to the graph of $f(x)$, the graph of $g(x)$ is
- 175 When the expression $2x(x - 4) - 3(x + 5)$ is written in simplest form, the result is
- 176 Which expression is equivalent to $(-4x^2)^3$?
- 177 If the zeros of the function $g(x)$ are $\{-3, 0, 4\}$, which function could represent $g(x)$?
- 178 The solution to $2x^2 = 72$ is
- 179 The length of a rectangular patio is 7 feet more than its width, w . The area of a patio, $A(w)$, can be represented by the function
- 180 If $f(x) = \frac{3x + 4}{2}$, then $f(8)$ is
- 181 A population of paramecia, P , can be modeled using the exponential function $P(t) = 3(2)^t$, where t is the number of days since the population was first observed. Which domain is most appropriate to use to determine the population over the course of the first two weeks?
- 182 If $y = 3x^3 + x^2 - 5$ and $z = x^2 - 12$, which polynomial is equivalent to $2(y + z)$?

Algebra I Regents Bimodal Worksheets

183 Given the functions $g(x)$, $f(x)$, and $h(x)$ shown below:

$$g(x) = x^2 - 2x$$

x	$f(x)$
0	1
1	2
2	5
3	7



The correct list of functions ordered from greatest to least by average rate of change over the interval $0 \leq x \leq 3$ is

184 The zeros of the function $f(x) = (x + 2)^2 - 25$ are

187 Which value of x is a solution to the equation $13 - 36x^2 = -12$?

185 The zeros of the function $f(x) = 3x^2 - 3x - 6$ are

188 Miriam and Jessica are growing bacteria in a laboratory. Miriam uses the growth function $f(t) = n^{2t}$ while Jessica uses the function $g(t) = n^{4t}$, where n represents the initial number of bacteria and t is the time, in hours. If Miriam starts with 16 bacteria, how many bacteria should Jessica start with to achieve the same growth over time?

186 Which graph represents $f(x) = \begin{cases} |x| & x < 1 \\ \sqrt{x} & x \geq 1 \end{cases}$?

- 189 For which function defined by a polynomial are the zeros of the polynomial -4 and -6 ?
- 190 What is the *minimum* value of the function $y = |x + 3| - 2$?
- 191 The length of the shortest side of a right triangle is 8 inches. The lengths of the other two sides are represented by consecutive odd integers. Which equation could be used to find the lengths of the other sides of the triangle?
- 192 The third term in an arithmetic sequence is 10 and the fifth term is 26. If the first term is a_1 , which is an equation for the n th term of this sequence?
- 193 A construction company uses the function $f(p)$, where p is the number of people working on a project, to model the amount of money it spends to complete a project. A reasonable domain for this function would be
- 194 An equation is given below.
 $4(x - 7) = 0.3(x + 2) + 2.11$
The solution to the equation is
- 195 Fred is given a rectangular piece of paper. If the length of Fred's piece of paper is represented by $2x - 6$ and the width is represented by $3x - 5$, then the paper has a total area represented by
- 196 When factored completely, the expression $p^4 - 81$ is equivalent to
- 197 Which graph represents $y = \sqrt{x - 2}$?
- 198 What are the roots of the equation $x^2 + 4x - 16 = 0$?
- 199 Gretchen has \$50 that she can spend at the fair. Ride tickets cost \$1.25 each and game tickets cost \$2 each. She wants to go on a minimum of 10 rides and play at least 12 games. Which system of inequalities represents this situation when r is the number of ride tickets purchased and g is the number of game tickets purchased?
- 200 Boyle's Law involves the pressure and volume of gas in a container. It can be represented by the formula $P_1 V_1 = P_2 V_2$. When the formula is solved for P_2 , the result is
- 201 A plumber has a set fee for a house call and charges by the hour for repairs. The total cost of her services can be modeled by $c(t) = 125t + 95$. Which statements about this function are true?
I. A house call fee costs \$95.
II. The plumber charges \$125 per hour.
III. The number of hours the job takes is represented by t .
- 202 Which graph shows a line where each value of y is three more than half of x ?
- 203 When $(2x - 3)^2$ is subtracted from $5x^2$, the result is
- 204 What are the solutions to the equation $x^2 - 8x = 24$?

- 205 A laboratory technician studied the population growth of a colony of bacteria. He recorded the number of bacteria every other day, as shown in the partial table below.

t (time, in days)	0	2	4
f(t) (bacteria)	25	15,625	9,765,625

Which function would accurately model the technician's data?

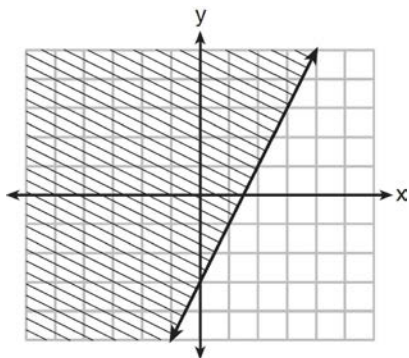
- 206 The daily cost of production in a factory is calculated using $c(x) = 200 + 16x$, where x is the number of complete products manufactured. Which set of numbers best defines the domain of $c(x)$?
- 207 The range of the function $f(x) = x^2 + 2x - 8$ is all real numbers
- 208 What is the solution to $2h + 8 > 3h - 6$?
- 209 Which expression is equivalent to $16x^2 - 36$?
- 210 Sara was asked to solve this word problem: "The product of two consecutive integers is 156. What are the integers?" What type of equation should she create to solve this problem?
- 211 A satellite television company charges a one-time installation fee and a monthly service charge. The total cost is modeled by the function $y = 40 + 90x$. Which statement represents the meaning of each part of the function?
- 212 Which graph represents the solution of $y \leq x + 3$ and $y \geq -2x - 2$?
- 213 Peyton is a sprinter who can run the 40-yard dash in 4.5 seconds. He converts his speed into miles per hour, as shown below.
- $$\frac{40 \text{ yd}}{4.5 \text{ sec}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$$
- Which ratio is *incorrectly* written to convert his speed?
- 214 Mo's farm stand sold a total of 165 pounds of apples and peaches. She sold apples for \$1.75 per pound and peaches for \$2.50 per pound. If she made \$337.50, how many pounds of peaches did she sell?
- 215 A company produces x units of a product per month, where $C(x)$ represents the total cost and $R(x)$ represents the total revenue for the month. The functions are modeled by $C(x) = 300x + 250$ and $R(x) = -0.5x^2 + 800x - 100$. The profit is the difference between revenue and cost where $P(x) = R(x) - C(x)$. What is the total profit, $P(x)$, for the month?
- 216 How does the graph of $f(x) = 3(x - 2)^2 + 1$ compare to the graph of $g(x) = x^2$?

217 When $3x + 2 \leq 5(x - 4)$ is solved for x , the solution is

218 The function $V(t) = 1350(1.017)^t$ represents the value $V(t)$, in dollars, of a comic book t years after its purchase. The yearly rate of appreciation of the comic book is

219 When solving the equation $4(3x^2 + 2) - 9 = 8x^2 + 7$, Emily wrote $4(3x^2 + 2) = 8x^2 + 16$ as her first step. Which property justifies Emily's first step?

220 Which inequality is represented by the graph below?



221 What is the domain of the relation shown below?
 $\{(4, 2), (1, 1), (0, 0), (1, -1), (4, -2)\}$

222 The value in dollars, $v(x)$, of a certain car after x years is represented by the equation $v(x) = 25,000(0.86)^x$. To the nearest dollar, how much more is the car worth after 2 years than after 3 years?

223 The zeros of the function $f(x) = 2x^2 - 4x - 6$ are

224 A population that initially has 20 birds approximately doubles every 10 years. Which graph represents this population growth?

225 What is the product of $2x + 3$ and $4x^2 - 5x + 6$?

226 Which domain would be the most appropriate set to use for a function that predicts the number of household online-devices in terms of the number of people in the household?

227 What is the solution of the equation $2(x + 2)^2 - 4 = 28$?

228 In the function $f(x) = (x - 2)^2 + 4$, the minimum value occurs when x is

229 What are the solutions to the equation $3x^2 + 10x = 8$?

230 A cell phone company charges \$60.00 a month for up to 1 gigabyte of data. The cost of additional data is \$0.05 per megabyte. If d represents the number of additional megabytes used and c represents the total charges at the end of the month, which linear equation can be used to determine a user's monthly bill?

- 231 The line represented by the equation $4y + 2x = 33.6$ shares a solution point with the line represented by the table below.

x	y
-5	3.2
-2	3.8
2	4.6
4	5
11	6.4

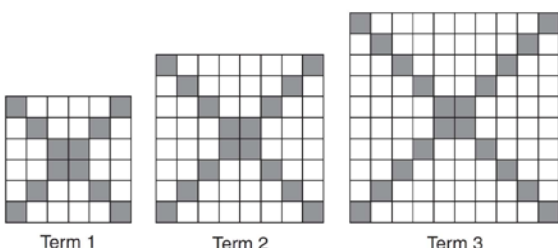
The solution for this system is

- 232 The function $f(x) = 3x^2 + 12x + 11$ can be written in vertex form as
- 233 The expression $3(x^2 - 1) - (x^2 - 7x + 10)$ is equivalent to
- 234 Faith wants to use the formula $C(f) = \frac{5}{9}(f - 32)$ to convert degrees Fahrenheit, f , to degrees Celsius, $C(f)$. If Faith calculated $C(68)$, what would her result be?
- 235 The owner of a small computer repair business has one employee, who is paid an hourly rate of \$22. The owner estimates his weekly profit using the function $P(x) = 8600 - 22x$. In this function, x represents the number of
- 236 The country of Benin in West Africa has a population of 9.05 million people. The population is growing at a rate of 3.1% each year. Which function can be used to find the population 7 years from now?
- 237 The Celluloid Cinema sold 150 tickets to a movie. Some of these were child tickets and the rest were adult tickets. A child ticket cost \$7.75 and an adult ticket cost \$10.25. If the cinema sold \$1470 worth of tickets, which system of equations could be used to determine how many adult tickets, a , and how many child tickets, c , were sold?
- 238 John has four more nickels than dimes in his pocket, for a total of \$1.25. Which equation could be used to determine the number of dimes, x , in his pocket?
- 239 What is the largest integer, x , for which the value of $f(x) = 5x^4 + 30x^2 + 9$ will be greater than the value of $g(x) = 3^x$?
- 240 Michael borrows money from his uncle, who is charging him simple interest using the formula $I = Prt$. To figure out what the interest rate, r , is, Michael rearranges the formula to find r . His new formula is r equals

- 241 Milton has his money invested in a stock portfolio. The value, $v(x)$, of his portfolio can be modeled with the function $v(x) = 30,000(0.78)^x$, where x is the number of years since he made his investment. Which statement describes the rate of change of the value of his portfolio?

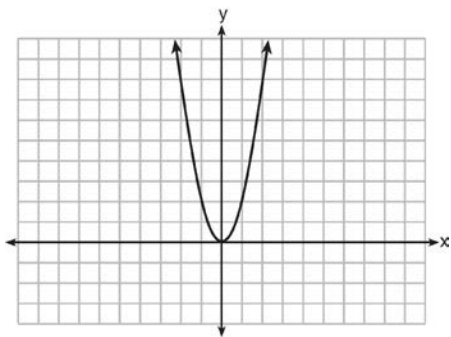
- 242 The inequality $7 - \frac{2}{3}x < x - 8$ is equivalent to

- 243 The diagrams below represent the first three terms of a sequence.



Assuming the pattern continues, which formula determines a_n , the number of shaded squares in the n th term?

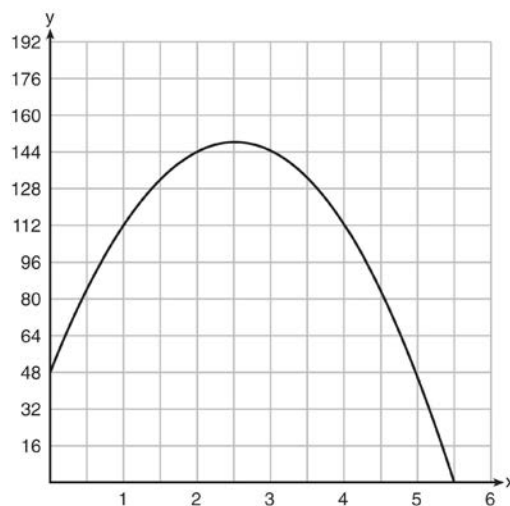
- 244 The graph of the equation $y = ax^2$ is shown below.



If a is multiplied by $-\frac{1}{2}$, the graph of the new equation is

- 245 Morgan throws a ball up into the air. The height of the ball above the ground, in feet, is modeled by the function $h(t) = -16t^2 + 24t$, where t represents the time, in seconds, since the ball was thrown. What is the appropriate domain for this situation?

- 246 A ball is thrown into the air from the edge of a 48-foot-high cliff so that it eventually lands on the ground. The graph below shows the height, y , of the ball from the ground after x seconds.



For which interval is the ball's height always decreasing?

- 247 How many of the equations listed below represent the line passing through the points $(2, 3)$ and $(4, -7)$?

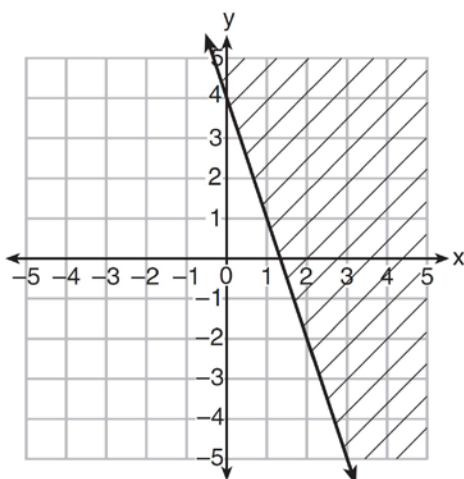
$$5x + y = 13$$

$$y + 7 = -5(x - 4)$$

$$y = -5x + 13$$

$$y - 7 = 5(x - 4)$$

- 248 Which inequality is represented in the graph below?



- 249 When directed to solve a quadratic equation by completing the square, Sam arrived at the equation $\left(x - \frac{5}{2}\right)^2 = \frac{13}{4}$. Which equation could have been the original equation given to Sam?

- 250 Morgan can start wrestling at age 5 in Division 1. He remains in that division until his next odd birthday when he is required to move up to the next division level. Which graph correctly represents this information?

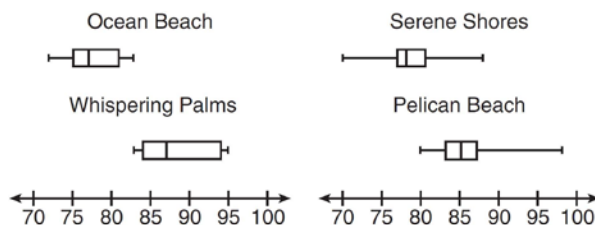
- 251 In 2013, the United States Postal Service charged \$0.46 to mail a letter weighing up to 1 oz. and \$0.20 per ounce for each additional ounce. Which function would determine the cost, in dollars, $c(z)$, of mailing a letter weighing z ounces where z is an integer greater than 1?

- 252 The formula for the surface area of a right rectangular prism is $A = 2lw + 2hw + 2lh$, where l , w , and h represent the length, width, and height, respectively. Which term of this formula is *not* dependent on the height?

- 253 If Lylah completes the square for $f(x) = x^2 - 12x + 7$ in order to find the minimum, she must write $f(x)$ in the general form $f(x) = (x - a)^2 + b$. What is the value of a for $f(x)$?

- 254 The expression $49x^2 - 36$ is equivalent to

- 255 Corinne is planning a beach vacation in July and is analyzing the daily high temperatures for her potential destination. She would like to choose a destination with a high median temperature and a small interquartile range. She constructed box plots shown in the diagram below.



Which destination has a median temperature above 80 degrees and the smallest interquartile range?

- 256 The expression $9m^2 - 100$ is equivalent to

- 257 If $f(x) = \frac{1}{2}x^2 - \left(\frac{1}{4}x + 3\right)$, what is the value of $f(8)$?

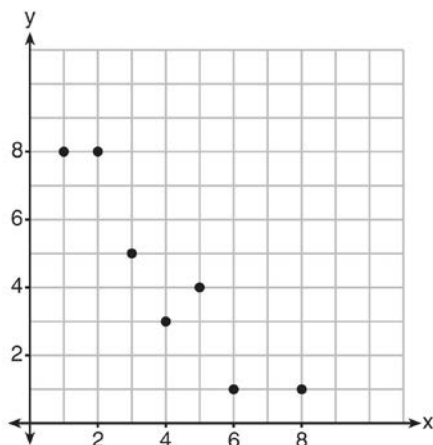
- 258 A public opinion poll was taken to explore the relationship between age and support for a candidate in an election. The results of the poll are summarized in the table below.

Age	For	Against	No Opinion
21-40	30	12	8
41-60	20	40	15
Over 60	25	35	15

What percent of the 21-40 age group was for the candidate?

- 259 Abigail's and Gina's ages are consecutive integers. Abigail is younger than Gina and Gina's age is represented by x . If the difference of the square of Gina's age and eight times Abigail's age is 17, which equation could be used to find Gina's age?

- 260 What is the correlation coefficient of the linear fit of the data shown below, to the nearest hundredth?



- 261 Given: $y + x > 2$

$$y \leq 3x - 2$$

Which graph shows the solution of the given set of inequalities?

- 262 If $4x^2 - 100 = 0$, the roots of the equation are

- 263 The equation for the volume of a cylinder is $V = \pi r^2 h$. The positive value of r , in terms of h and V , is

- 264 Connor wants to attend the town carnival. The price of admission to the carnival is \$4.50, and each ride costs an additional 79 cents. If he can spend at most \$16.00 at the carnival, which inequality can be used to solve for r , the number of rides Connor can go on, and what is the maximum number of rides he can go on?

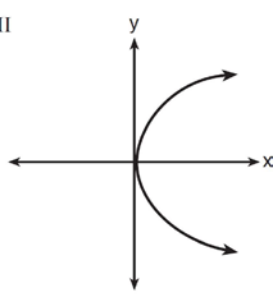
- 265 Given the functions $h(x) = \frac{1}{2}x + 3$ and $j(x) = |x|$, which value of x makes $h(x) = j(x)$?

- 266 A construction worker needs to move 120 ft^3 of dirt by using a wheelbarrow. One wheelbarrow load holds 8 ft^3 of dirt and each load takes him 10 minutes to complete. One correct way to figure out the number of hours he would need to complete this job is

- 267 A radio station did a survey to determine what kind of music to play by taking a sample of middle school, high school, and college students. They were asked which of three different types of music they prefer on the radio: hip-hop, alternative, or classic rock. The results are summarized in the table below.

	Hip-Hop	Alternative	Classic Rock
Middle School	28	18	4
High School	22	22	6
College	16	20	14

What percentage of college students prefer classic rock?

- 268 If the quadratic formula is used to find the roots of the equation $x^2 - 6x - 19 = 0$, the correct roots are
- 269 The point $(3, w)$ is on the graph of $y = 2x + 7$. What is the value of w ?
- 270 Grisham is considering the three situations below.
 I. For the first 28 days, a sunflower grows at a rate of 3.5 cm per day.
 II. The value of a car depreciates at a rate of 15% per year after it is purchased.
 III. The amount of bacteria in a culture triples every two days during an experiment.
 Which of the statements describes a situation with an equal difference over an equal interval?
- 271 A typical cell phone plan has a fixed base fee that includes a certain amount of data and an overage charge for data use beyond the plan. A cell phone plan charges a base fee of \$62 and an overage charge of \$30 per gigabyte of data that exceed 2 gigabytes. If C represents the cost and g represents the total number of gigabytes of data, which equation could represent this plan when more than 2 gigabytes are used?
- 272 When factored completely, $x^3 - 13x^2 - 30x$ is
- 273 Which polynomial function has zeros at -3 , 0 , and 4 ?
- 274 Which representations are functions?
- I
- | x | y |
|---|-----|
| 2 | 6 |
| 3 | -12 |
| 4 | 7 |
| 5 | 5 |
| 2 | -6 |
- II $\{(1,1), (2,1), (3,2), (4,3), (5,5), (6,8), (7,13)\}$
- III
- 
- IV $y = 2x + 1$
- 275 A car leaves Albany, NY, and travels west toward Buffalo, NY. The equation $D = 280 - 59t$ can be used to represent the distance, D , from Buffalo after t hours. In this equation, the 59 represents the

- 276 The table below shows the average yearly balance in a savings account where interest is compounded annually. No money is deposited or withdrawn after the initial amount is deposited.

Year	Balance, in Dollars
0	380.00
10	562.49
20	832.63
30	1232.49
40	1824.39
50	2700.54

Which type of function best models the given data?

- 277 If a population of 100 cells triples every hour, which function represents $p(t)$, the population after t hours?
- 278 Alicia has invented a new app for smart phones that two companies are interested in purchasing for a 2-year contract. Company A is offering her \$10,000 for the first month and will increase the amount each month by \$5000. Company B is offering \$500 for the first month and will double their payment each month from the previous month. Monthly payments are made at the end of each month. For which monthly payment will company B 's payment first exceed company A 's payment?
- 279 Given the graph of the line represented by the equation $f(x) = -2x + b$, if b is increased by 4 units, the graph of the new line would be shifted 4 units
- 280 Joe has a rectangular patio that measures 10 feet by 12 feet. He wants to increase the area by 50% and plans to increase each dimension by equal lengths, x . Which equation could be used to determine x ?
- 281 What is the solution to the inequality $2 + \frac{4}{9}x \geq 4 + x$?
- 282 Given the following expressions:
 I. $-\frac{5}{8} + \frac{3}{5}$ III. $(\sqrt{5}) \cdot (\sqrt{5})$
 II. $\frac{1}{2} + \sqrt{2}$ IV. $3 \cdot (\sqrt{49})$
 Which expression(s) result in an irrational number?
- 283 Kendal bought x boxes of cookies to bring to a party. Each box contains 12 cookies. She decides to keep two boxes for herself. She brings 60 cookies to the party. Which equation can be used to find the number of boxes, x , Kendal bought?
- 284 A store sells self-serve frozen yogurt sundaes. The function $C(w)$ represents the cost, in dollars, of a sundae weighing w ounces. An appropriate domain for the function would be
- 285 The range of the function $f(x) = |x + 3| - 5$ is

286 The table below represents the function F .

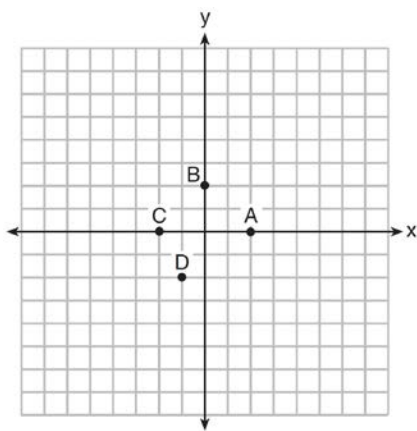
x	3	4	6	7	8
$F(x)$	9	17	65	129	257

The equation that represents this function is

287 If $f(x) = \frac{\sqrt{2x+3}}{6x-5}$, then $f\left(\frac{1}{2}\right) =$

288 The equation $A = 1300(1.02)^7$ is being used to calculate the amount of money in a savings account. What does 1.02 represent in this equation?

289 The graph of $y = f(x)$ is shown below.



Which point could be used to find $f(2)$?

290 What are the solutions to the equation $x^2 - 8x = 10$?

291 The solution of the equation $(x+3)^2 = 7$ is

292 Which trinomial is equivalent to $3(x-2)^2 - 2(x-1)$?

293 An online company lets you download songs for \$0.99 each after you have paid a \$5 membership fee. Which domain would be most appropriate to calculate the cost to download songs?

294 Which expression is equivalent to $2(3g-4) - (8g+3)$?

295 What are the zeros of the function $f(x) = x^2 - 13x - 30$?

296 Four expressions are shown below.

- I $2(2x^2 - 2x - 60)$
- II $4(x^2 - x - 30)$
- III $4(x+6)(x-5)$
- IV $4x(x-1) - 120$

The expression $4x^2 - 4x - 120$ is equivalent to

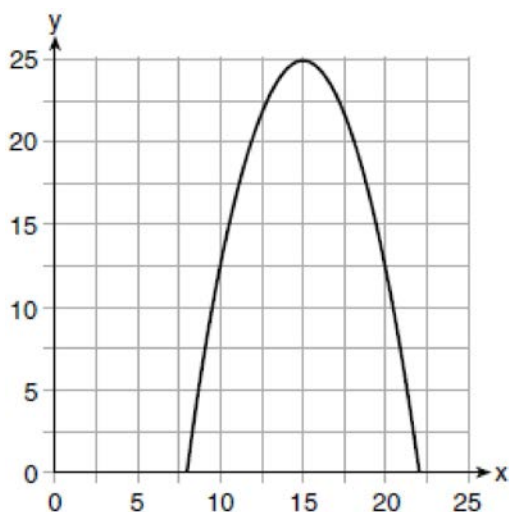
297 Which value of x satisfies the equation $\frac{5}{6}\left(\frac{3}{8} - x\right) = 16$?

- 298 Joey enlarged a 3-inch by 5-inch photograph on a copy machine. He enlarged it four times. The table below shows the area of the photograph after each enlargement.

Enlargement	0	1	2	3	4
Area (square inches)	15	18.8	23.4	29.3	36.6

What is the average rate of change of the area from the original photograph to the fourth enlargement, to the nearest tenth?

- 299 The graph of a quadratic function is shown below.



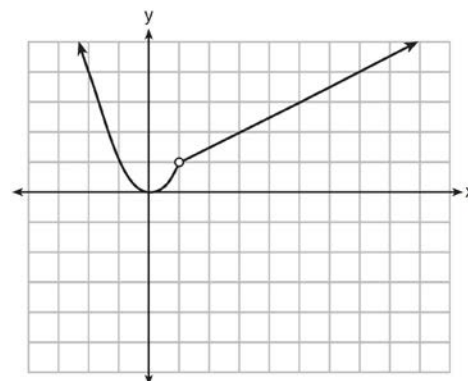
An equation that represents the function could be

- 300 Which expression is equivalent to $36x^2 - 100$?
- 301 Krystal was given \$3000 when she turned 2 years old. Her parents invested it at a 2% interest rate compounded annually. No deposits or withdrawals were made. Which expression can be used to determine how much money Krystal had in the account when she turned 18?

- 302 The zeros of the function $f(x) = x^2 - 5x - 6$ are

- 303 During the 2010 season, football player McGee's earnings, m , were 0.005 million dollars more than those of his teammate Fitzpatrick's earnings, f . The two players earned a total of 3.95 million dollars. Which system of equations could be used to determine the amount each player earned, in millions of dollars?

- 304 A function is graphed on the set of axes below.



Which function is related to the graph?

- 305 A student is asked to solve the equation $4(3x - 1)^2 - 17 = 83$. The student's solution to the problem starts as $4(3x - 1)^2 = 100$

$$(3x - 1)^2 = 25$$

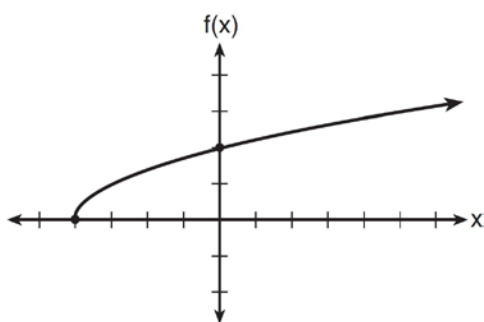
A correct next step in the solution of the problem is

- 306 The table below shows the temperature, $T(m)$, of a cup of hot chocolate that is allowed to chill over several minutes, m .

Time, m (minutes)	0	2	4	6	8
Temperature, $T(m)$ ($^{\circ}\text{F}$)	150	108	78	56	41

Which expression best fits the data for $T(m)$?

- 307 The graph of the function $f(x) = \sqrt{x+4}$ is shown below.



The domain of the function is

- 308 To watch a varsity basketball game, spectators must buy a ticket at the door. The cost of an adult ticket is \$3.00 and the cost of a student ticket is \$1.50. If the number of adult tickets sold is represented by a and student tickets sold by s , which expression represents the amount of money collected at the door from the ticket sales?
- 309 When the function $f(x) = x^2$ is multiplied by the value a , where $a > 1$, the graph of the new function, $g(x) = ax^2$
- 310 It takes Tim 4.5 hours to run 50 kilometers. Which expression will allow him to change this rate to minutes per mile?

- 311 What is a common ratio of the geometric sequence whose first term is 5 and third term is 245?

- 312 Which equation and ordered pair represent the correct vertex form and vertex for $j(x) = x^2 - 12x + 7$?

- 313 The distance a free falling object has traveled can be modeled by the equation $d = \frac{1}{2}at^2$, where a is acceleration due to gravity and t is the amount of time the object has fallen. What is t in terms of a and d ?

- 314 The volume of a trapezoidal prism can be found using the formula $V = \frac{1}{2}a(b+c)h$. Which equation is correctly solved for b ?

- 315 Which value of x satisfies the equation $\frac{7}{3}\left(x + \frac{9}{28}\right) = 20$?

- 316 Andy has \$310 in his account. Each week, w , he withdraws \$30 for his expenses. Which expression could be used if he wanted to find out how much money he had left after 8 weeks?

317 The tables below show the values of four different functions for given values of x .

x	$f(x)$		x	$g(x)$		x	$h(x)$		x	$k(x)$
1	12		1	-1		1	9		1	-2
2	19		2	1		2	12		2	4
3	26		3	5		3	17		3	14
4	33		4	13		4	24		4	28

Which table represents a linear function?

318 A part of Jennifer's work to solve the equation $2(6x^2 - 3) = 11x^2 - x$ is shown below.

$$\text{Given: } 2(6x^2 - 3) = 11x^2 - x$$

$$\text{Step 1: } 12x^2 - 6 = 11x^2 - x$$

Which property justifies her first step?

319 If $f(x) = x^2 - 2x - 8$ and $g(x) = \frac{1}{4}x - 1$, for which values of x is $f(x) = g(x)$?

320 The cost of a pack of chewing gum in a vending machine is \$0.75. The cost of a bottle of juice in the same machine is \$1.25. Julia has \$22.00 to spend on chewing gum and bottles of juice for her team and she must buy seven packs of chewing gum. If b represents the number of bottles of juice, which inequality represents the maximum number of bottles she can buy?

321 Dan took 12.5 seconds to run the 100-meter dash. He calculated the time to be approximately

322 Let f be a function such that $f(x) = 2x - 4$ is defined on the domain $2 \leq x \leq 6$. The range of this function is

323 Which value of x results in equal outputs for $j(x) = 3x - 2$ and $b(x) = |x + 2|$?

324 In a sequence, the first term is 4 and the common difference is 3. The fifth term of this sequence is

325 The function $h(t) = -16t^2 + 144$ represents the height, $h(t)$, in feet, of an object from the ground at t seconds after it is dropped. A realistic domain for this function is

326 Jordan works for a landscape company during his summer vacation. He is paid \$12 per hour for mowing lawns and \$14 per hour for planting gardens. He can work a maximum of 40 hours per week, and would like to earn at least \$250 this week. If m represents the number of hours mowing lawns and g represents the number of hours planting gardens, which system of inequalities could be used to represent the given conditions?

327 The value of the x -intercept for the graph of $4x - 5y = 40$ is

- 328 The table below shows the number of grams of carbohydrates, x , and the number of Calories, y , of six different foods.

Carbohydrates (x)	Calories (y)
8	120
9.5	138
10	147
6	88
7	108
4	62

Which equation best represents the line of best fit for this set of data?

- 329 Lynn, Jude, and Anne were given the function $f(x) = -2x^2 + 32$, and they were asked to find $f(3)$. Lynn's answer was 14, Jude's answer was 4, and Anne's answer was ± 4 . Who is correct?

- 334 An astronaut drops a rock off the edge of a cliff on the Moon. The distance, $d(t)$, in meters, the rock travels after t seconds can be modeled by the function $d(t) = 0.8t^2$. What is the average speed, in meters per second, of the rock between 5 and 10 seconds after it was dropped?

- 330 What is the value of x in the equation

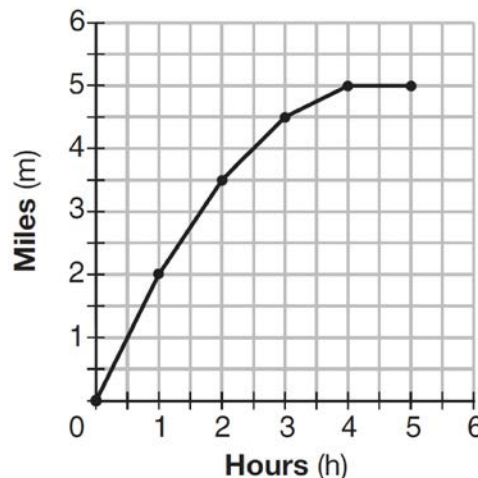
$$\frac{x-2}{3} + \frac{1}{6} = \frac{5}{6}?$$

- 335 The graph below shows the distance in miles, m , hiked from a camp in h hours.

- 331 What is the solution to the system of equations below?

$$\begin{aligned} y &= 2x + 8 \\ 3(-2x + y) &= 12 \end{aligned}$$

- 332 Sam and Jeremy have ages that are consecutive odd integers. The product of their ages is 783. Which equation could be used to find Jeremy's age, j , if he is the younger man?



- 333 The formula for the volume of a cone is $V = \frac{1}{3} \pi r^2 h$. The radius, r , of the cone may be expressed as

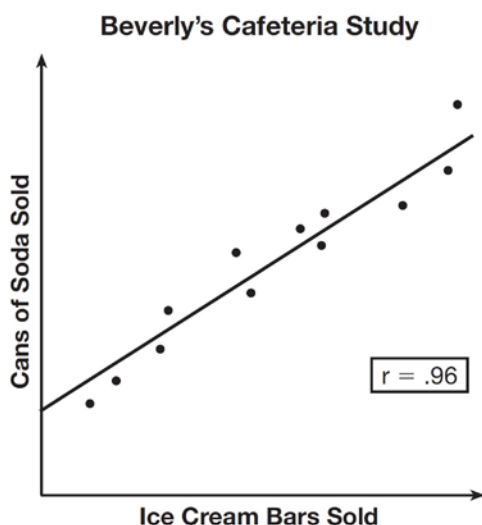
Which hourly interval had the greatest rate of change?

- 336 A parking garage charges a base rate of \$3.50 for up to 2 hours, and an hourly rate for each additional hour. The sign below gives the prices for up to 5 hours of parking.

Parking Rates	
2 hours	\$3.50
3 hours	\$9.00
4 hours	\$14.50
5 hours	\$20.00

Which linear equation can be used to find x , the additional hourly parking rate?

- 337 Beverly did a study this past spring using data she collected from a cafeteria. She recorded data weekly for ice cream sales and soda sales. Beverly found the line of best fit and the correlation coefficient, as shown in the diagram below.



Given this information, which statement(s) can correctly be concluded?

- I. Eating more ice cream causes a person to become thirsty.
- II. Drinking more soda causes a person to become hungry.
- III. There is a strong correlation between ice cream sales and soda sales.

- 338 The range of the function defined as $y = 5^x$ is
- 339 Some banks charge a fee on savings accounts that are left inactive for an extended period of time. The equation $y = 5000(0.98)^x$ represents the value, y , of one account that was left inactive for a period of x years. What is the y -intercept of this equation and what does it represent?
- 340 Officials in a town use a function, C , to analyze traffic patterns. $C(n)$ represents the rate of traffic through an intersection where n is the number of observed vehicles in a specified time interval. What would be the most appropriate domain for the function?
- 341 If $A = 3x^2 + 5x - 6$ and $B = -2x^2 - 6x + 7$, then $A - B$ equals
- 342 Keith determines the zeros of the function $f(x)$ to be -6 and 5 . What could be Keith's function?

- 343 The table below shows the average diameter of a pupil in a person's eye as he or she grows older.

Age (years)	Average Pupil Diameter (mm)
20	4.7
30	4.3
40	3.9
50	3.5
60	3.1
70	2.7
80	2.3

What is the average rate of change, in millimeters per year, of a person's pupil diameter from age 20 to age 80?

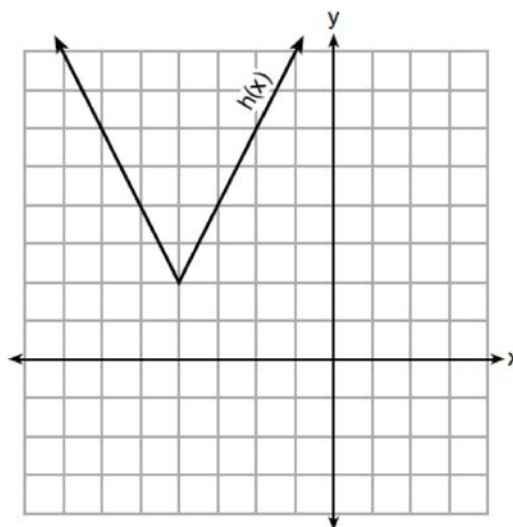
- 344 Anne invested \$1000 in an account with a 1.3% annual interest rate. She made no deposits or withdrawals on the account for 2 years. If interest was compounded annually, which equation represents the balance in the account after the 2 years?

- 345 For a recently released movie, the function $y = 119.67(0.61)^x$ models the revenue earned, y , in millions of dollars each week, x , for several weeks after its release. Based on the equation, how much more money, in millions of dollars, was earned in revenue for week 3 than for week 5?

- 346 A company that manufactures radios first pays a start-up cost, and then spends a certain amount of money to manufacture each radio. If the cost of manufacturing r radios is given by the function $c(r) = 5.25r + 125$, then the value 5.25 best represents

- 347 What is the solution set of the equation $(x - 2)(x - a) = 0$?

- 348 The function $h(x)$, which is graphed below, and the function $g(x) = 2|x + 4| - 3$ are given.



Which statements about these functions are true?

- I. $g(x)$ has a lower minimum value than $h(x)$.
- II. For all values of x , $h(x) < g(x)$.
- III. For any value of x , $g(x) \neq h(x)$.

- 349 Last week, a candle store received \$355.60 for selling 20 candles. Small candles sell for \$10.98 and large candles sell for \$27.98. How many large candles did the store sell?

- 350 Konnor wants to burn 250 Calories while exercising for 45 minutes at the gym. On the treadmill, he can burn 6 Cal/min. On the stationary bike, he can burn 5 Cal/min. If t represents the number of minutes on the treadmill and b represents the number of minutes on the stationary bike, which expression represents the number of Calories that Konnor can burn on the stationary bike?
- 351 The highest possible grade for a book report is 100. The teacher deducts 10 points for each day the report is late. Which kind of function describes this situation?

Algebra I Regents Bimodal Worksheets

Answer Section

1 ANS:

$$\frac{\frac{1}{4} \text{ cup}}{4 \text{ tablespoons}}$$

PTS: 2

REF: 081812ai

TOP: Conversions KEY: dimensional analysis

2 ANS:

$$\frac{37}{\frac{44 + 30}{32 + 44 + 24 + 36 + 30 + 34}} = 37\%$$

PTS: 2

REF: 082212ai

TOP: Frequency Tables

KEY: two-way

3 ANS:

$$\frac{72}{\frac{138}{192}} \approx 72\%$$

PTS: 2

REF: 012010ai

TOP: Frequency Tables

KEY: two-way

4 ANS:

$$D + Q = 30$$

$$.10D + .25Q = 4.80$$

PTS: 2

REF: 081809ai

TOP: Modeling Linear Systems

5 ANS:

natural numbers

PTS: 2

REF: 012313ai

TOP: Domain and Range

KEY: context

6 ANS:

$$2x + 0.50y \leq 100$$

PTS: 2

REF: 062205ai

TOP: Modeling Linear Inequalities

7 ANS:

greater than or equal to -6

$$x = \frac{-2}{2(1)} = -1; f(-1) = (-1)^2 + 2(-1) - 5 = -6$$

PTS: 2

REF: 082316ai

TOP: Domain and Range

8 ANS:

24

$$\frac{56}{56 + 74 + 103} \approx 0.24$$

PTS: 2

REF: 081906ai

TOP: Frequency Tables

KEY: two-way

9 ANS:

$$5x\sqrt{7}$$

PTS: 2

REF: fall2301ai

TOP: Operations with Radicals

KEY: addition

10 ANS:

$$(-\infty, \infty)$$

PTS: 2

REF: 062320ai

TOP: Domain and Range

11 ANS:

an integer ≥ 0

PTS: 2

REF: 061821ai

TOP: Domain and Range

KEY: context

12 ANS:

narrower and open downward

PTS: 2

REF: 012310ai

TOP: Graphing Polynomial Functions

13 ANS:

4

$$3K - 5 = 7$$

$$3K = 12$$

$$K = 4$$

PTS: 2

REF: 082205ai

TOP: Identifying Solutions

14 ANS:

$$T_f = \frac{Q}{mC} + T_i$$

$$\frac{Q}{mC} = T_f - T_i$$

$$\frac{Q}{mC} + T_i = T_f$$

PTS: 2

REF: 012318ai

TOP: Transforming Formulas

- 15 ANS:
 -4 and 6
 $p(x) = x^2 - 2x - 24 = (x - 6)(x + 4) = 0$
 $x = 6, -4$

PTS: 2 REF: 061804ai TOP: Zeros of Polynomials

- 16 ANS:
 Ryan

PTS: 2 REF: 012303ai TOP: Modeling Expressions

- 17 ANS:
 the addition property of equality

PTS: 2 REF: 061909ai TOP: Identifying Properties

- 18 ANS:
 148
 $a_n = 4n + 8$
 $a_{35} = 4(35) + 8 = 148$

PTS: 2 REF: 012008ai TOP: Sequences KEY: explicit

- 19 ANS:
 1, 2
 $-2(x - 5) < 10$
 $x - 5 > -5$
 $x > 0$

PTS: 2 REF: 011817ai TOP: Interpreting Solutions

- 20 ANS:
 I, only
 I. $10 \text{ mi} \left(\frac{1.609 \text{ km}}{1 \text{ mi}} \right) = 16.09 \text{ km}$; II. $44880 \text{ ft} \left(\frac{1 \text{ mi}}{5280 \text{ ft}} \right) \left(\frac{1.609 \text{ km}}{1 \text{ mi}} \right) \approx 13.6765 \text{ km}$; III.
 $15560 \text{ yd} \left(\frac{3 \text{ ft}}{1 \text{ yd}} \right) \left(\frac{1 \text{ mi}}{5280 \text{ ft}} \right) \left(\frac{1.609 \text{ km}}{1 \text{ mi}} \right) \approx 14.225 \text{ km}$

PTS: 2 REF: 061815ai TOP: Conversions KEY: dimensional analysis

- 21 ANS:
 $y - 7 = \frac{4}{3}(x - 2)$
 $m = \frac{7 - 3}{2 - -1} = \frac{4}{3}$

PTS: 2 REF: fall2302ai TOP: Writing Linear Equations
 KEY: other forms

22 ANS:

10

$$\frac{4}{3} = \frac{x+10}{15}$$

$$3x + 30 = 60$$

$$x = 10$$

PTS: 2

REF: 081904ai

TOP: Solving Linear Equations

KEY: fractional expressions

23 ANS:

$$a > -15b$$

$$a + 7b > -8b$$

$$a > -15b$$

PTS: 2

REF: 061913ai

TOP: Solving Linear Inequalities

24 ANS:

7

$$8 - 1 = 7$$

PTS: 2

REF: 081915ai

TOP: Box Plots

KEY: interpret

25 ANS:

positive real numbers

Time is continuous and positive.

PTS: 2

REF: 081921ai

TOP: Domain and Range

KEY: context

26 ANS:

the number of time periods

PTS: 2

REF: 062308ai

TOP: Modeling Exponential Functions

27 ANS:

$$\frac{C - Ax}{B}$$

$$Ax + By = C$$

$$By = C - Ax$$

$$y = \frac{C - Ax}{B}$$

PTS: 2

REF: 062211ai

TOP: Transforming Formulas

28 ANS:

$$2(x+3)^2 - 1$$

PTS: 2

REF: 011819ai

TOP: Graphing Polynomial Functions

29 ANS:
Anne

PTS: 2 REF: 061905ai TOP: Modeling Expressions

30 ANS:

$[-4.5, \infty)$

$$x = \frac{-(-2)}{2(2)} = 0.5 \quad h(0.5) = -4.5$$

PTS: 2 REF: 081923ai TOP: Domain and Range

KEY: real domain, quadratic

31 ANS:

$$a + (2a - 7) = 41$$

PTS: 2 REF: 061915ai TOP: Modeling Linear Equations

32 ANS:

-26

$$(6x^2 + 2x)(5x - 6) = 30x^3 - 36x^2 + 10x^2 - 12x = 30x^3 - 26x^2 - 12x$$

PTS: 2 REF: 081824ai TOP: Operations with Polynomials

KEY: multiplication

33 ANS:

exponential growth function

PTS: 2 REF: 061906ai TOP: Families of Functions

34 ANS:

$$(2x + 5)(2x - 5)$$

PTS: 2 REF: 081807ai TOP: Factoring the Difference of Perfect Squares

KEY: quadratic

35 ANS:

inches/minute

PTS: 2 REF: 012323ai TOP: Conversions

36 ANS:

-3

$$x^2 - 6x = 12$$

$$x^2 - 6x + 9 = 12 + 9$$

$$(x - 3)^2 = 21$$

PTS: 2 REF: 061812ai TOP: Solving Quadratics

KEY: completing the square

- 37 ANS:
the initial height of the ball
 $h(0) = -4.9(0)^2 + 6(0) + 5 = 5$

PTS: 2 REF: 011913ai TOP: Graphing Quadratic Functions
KEY: key features

- 38 ANS:
1.49
 $\frac{91 \text{ cm}}{\text{day}} \times \frac{1 \text{ day}}{24 \text{ hrs}} \times \frac{1 \text{ inch}}{2.54 \text{ cm}} \approx \frac{1.49 \text{ in}}{\text{hr}}$

PTS: 2 REF: 061924ai TOP: Conversions KEY: dimensional analysis

- 39 ANS:
-4, 0, and 4
 $m(x) = x(x + 4)(x - 4)$

PTS: 2 REF: 082313ai TOP: Zeros of Polynomials

- 40 ANS:
 $x + 5$
 $3(x + 4) - (2x + 7) = 3x + 12 - 2x - 7 = x + 5$

PTS: 2 REF: 062102ai TOP: Operations with Polynomials
KEY: subtraction

- 41 ANS:
 k units to the right and a move of 5 units up

PTS: 2 REF: 062113ai TOP: Graphing Polynomial Functions

- 42 ANS:
a closed circle at (3, 15) and an open circle at (3, 13)

PTS: 2 REF: 081815ai TOP: Graphing Piecewise-Defined Functions

- 43 ANS:
324
 $a_5 = 4(-3)^{5-1} = 324$

PTS: 2 REF: 012317ai TOP: Sequences KEY: explicit

- 44 ANS:
I and III
II is linear.

PTS: 2 REF: 081823ai TOP: Families of Functions

- 45 ANS:
 $(4x - 9)(4x + 9)$

PTS: 2 REF: 081908ai TOP: Factoring the Difference of Perfect Squares
KEY: quadratic

46 ANS:
3.5

PTS: 2 REF: 061922ai TOP: Dispersion KEY: basic

47 ANS:
6

PTS: 2 REF: 081805ai TOP: Functional Notation

48 ANS:
2 and 3

$$x^2 + 2x + 1 = 7x - 5$$

$$x^2 - 5x + 6 = 0$$

$$(x - 3)(x - 2) = 0$$

$$x = 3, 2$$

PTS: 2 REF: 012312ai TOP: Quadratic-Linear Systems

49 ANS:

$$0.10d + 0.05(2d + 5) = 1.45$$

PTS: 2 REF: 062213ai TOP: Modeling Linear Equations

50 ANS:

$$2a + 1$$

$$\frac{x - 1}{2} = a$$

$$x - 1 = 2a$$

$$x = 2a + 1$$

PTS: 2 REF: 062223ai TOP: Transforming Formulas

51 ANS:

$$y = (x + 12)^2 - 162$$

$$y = x^2 + 24x + 144 - 18 - 144$$

$$y = (x + 12)^2 - 162$$

PTS: 2 REF: 081911ai TOP: Vertex Form of a Quadratic

52 ANS:

I and IV

PTS: 2 REF: 081817ai TOP: Modeling Linear Functions

53 ANS:

$$-7$$

$$g(-4) = -(-4)^2 - (-4) + 5 = -7$$

PTS: 2 REF: 062311ai TOP: Functional Notation

54 ANS:

$$600(1 + 0.024)^4$$

PTS: 2

REF: 082209ai

TOP: Modeling Exponential Functions

55 ANS:

$$2$$

$$2x^3 + 3x^2 + 7x - 6$$

PTS: 2

REF: 082216ai

TOP: Modeling Expressions

56 ANS:

$$V(x) = (6 + x)(4 + x)(8)$$

PTS: 2

REF: 062312ai

TOP: Geometric Applications of Quadratics

57 ANS:

$$-27$$

$$g(-3) = -2(-3)^2 + 3(-3) = -18 - 9 = -27$$

PTS: 2

REF: 011902ai

TOP: Functional Notation

58 ANS:

nonnegative integers

PTS: 2

REF: 062324ai

TOP: Domain and Range

KEY: context

59 ANS:

$$I = \sqrt{\frac{P}{R}}$$

$$P = I^2 R$$

$$I^2 = \frac{P}{R}$$

$$I = \sqrt{\frac{P}{R}}$$

PTS: 2

REF: 011920ai

TOP: Transforming Formulas

60 ANS:

whole numbers

PTS: 2

REF: 062206ai

TOP: Domain and Range

KEY: context

61 ANS:

$$2x$$

$$\frac{2x^2}{x} = 2x$$

PTS: 2

REF: 082202ai

TOP: Sequences

KEY: difference or ratio

- 62 ANS:
 $g(x)$ is wider than $f(x)$.
- PTS: 2 REF: 062316ai TOP: Graphing Absolute Value Functions
- 63 ANS:
 I, II, and III
 Each expression equals x^9 .
- PTS: 2 REF: 082311ai TOP: Powers of Powers
- 64 ANS:
 $2x^2 + x - 15$
 (d) is the product, but not written in standard form.
- PTS: 2 REF: 062108ai TOP: Operations with Polynomials
 KEY: multiplication
- 65 ANS:
 1 and 7
 $3(x - 4)^2 = 27$
 $(x - 4)^2 = 9$
 $x - 4 = \pm 3$
 $x = 1, 7$
- PTS: 2 REF: 011814ai TOP: Solving Quadratics
 KEY: taking square roots
- 66 ANS:
 2%
- PTS: 2 REF: 061923ai TOP: Modeling Exponential Functions
- 67 ANS:
 -7
 $f(-3) = -12 + 5 = -7$
- PTS: 2 REF: 061902ai TOP: Functional Notation
- 68 ANS:

$$\frac{1.35 \text{ euros}}{1 \text{ L}} \cdot \frac{1 \text{ L}}{0.264 \text{ gal}} \cdot \frac{\$1.00}{0.622 \text{ euros}}$$
- PTS: 2 REF: 082324ai TOP: Conversions
- 69 ANS:
 $1.60x + 1.75y \leq 10$
- PTS: 2 REF: 061806ai TOP: Modeling Linear Inequalities

70 ANS:

I and III, only

 f and h 's vertex is $(-2, 5)$. g 's axis of symmetry is $x = -1.5$.

PTS: 2

REF: 062319ai

TOP: Comparing Quadratic Functions

71 ANS:

 -28

$$3x - 24 + 4x = 8x + 4$$

$$7x - 24 = 8x + 4$$

$$-28 = x$$

PTS: 2

REF: 062106ai

TOP: Solving Linear Equations

KEY: integral expressions

72 ANS:

$$P(c) = .75c - 9.96$$

$$P(c) = (.50 + .25)c - 9.96 = .75c - 9.96$$

PTS: 2

REF: 011807ai

TOP: Modeling Linear Functions

73 ANS:

 $-11.\bar{3}$

$$\frac{2}{3} \left(\frac{1}{4}x - 2 \right) = \frac{1}{5} \left(\frac{4}{3}x - 1 \right)$$

$$10(3x - 24) = 3(16x - 12)$$

$$30x - 240 = 48x - 36$$

$$-204 = 18x$$

$$x = -11.\bar{3}$$

PTS: 2

REF: 011822ai

TOP: Solving Linear Equations

KEY: fractional expressions

74 ANS:

$$5x^2 - 12x - 2$$

$$2(x^2 - 1) + 3x(x - 4) = 2x^2 - 2 + 3x^2 - 12x = 5x^2 - 12x - 2$$

PTS: 2

REF: 081903ai

TOP: Operations with Polynomials

KEY: addition

75 ANS:

$$\frac{2A}{b_1 + b_2}$$

$$2A = (b_1 + b_2)h$$

$$\frac{2A}{b_1 + b_2} = h$$

PTS: 2

REF: 062315ai

TOP: Transforming Formulas

76 ANS:

$$-4x^2 - 6$$

PTS: 2

REF: 011813ai

TOP: Operations with Polynomials

KEY: addition

77 ANS:

$$\{0, 1, 16, 81\}$$

PTS: 2

REF: 081806ai

TOP: Domain and Range

KEY: limited domain

78 ANS:

290, the amount he is guaranteed to be paid each week

PTS: 2

REF: 061817ai

TOP: Modeling Linear Functions

79 ANS:

I, II, and III

PTS: 2

REF: 012022ai

TOP: Dot Plots

80 ANS:

I and III

$$t(m) = 2(3)^{2m+1} = 2(3)^{2m}(3)^1 = 6(3)^{2m} = 6(3^2)^m = 6(9)^m$$

PTS: 2

REF: 012019ai

TOP: Modeling Exponential Functions

81 ANS:

$$\frac{1}{3}$$

$$2 + 3(2a + 1) = 3(a + 2)$$

$$2 + 6a + 3 = 3a + 6$$

$$3a + 5 = 6$$

$$3a = 1$$

$$a = \frac{1}{3}$$

PTS: 2

REF: 012307ai

TOP: Solving Linear Equations

82 ANS:

6

$$\frac{x-3}{4} + \frac{8}{12} = \frac{17}{12}$$

$$\frac{x-3}{4} = \frac{9}{12}$$

$$\frac{x-3}{4} = \frac{3}{4}$$

$$x-3=3$$

$$x=6$$

PTS: 2

REF: 012005ai

TOP: Solving Linear Equations

KEY: fractional expressions

83 ANS:

$$C(x) = 35x + 245$$

PTS: 2

REF: 062101ai

TOP: Modeling Linear Functions

84 ANS:

$$1.50(5) + 2.00m \leq 19.00$$

PTS: 2

REF: 062107ai

TOP: Modeling Linear Inequalities

85 ANS:

linear

PTS: 2

REF: 011805ai

TOP: Families of Functions

86 ANS:

0.25

$$\frac{60-45}{60} = \frac{15}{60} = \frac{1}{4}$$

PTS: 2

REF: 081814ai

TOP: Frequency Tables

KEY: two-way

87 ANS:

zero

$$b^2 - 4ac = 2^2 - 4(4)(5) = -76$$

PTS: 2

REF: 061822ai

TOP: Using the Discriminant

88 ANS:

$$2x^3 - x^2 + 3x$$

PTS: 2

REF: 082206ai

TOP: Operations with Polynomials

KEY: multiplication

89 ANS:

Fred said II and III because the exponents are decreasing.

PTS: 2

REF: 061819ai

TOP: Modeling Expressions

90 ANS:

5

$$h(t) = 0$$

$$-16t^2 + 64t + 80 = 0$$

$$t^2 - 4t - 5 = 0$$

$$(t - 5)(t + 1) = 0$$

$$t = 5, -1$$

PTS: 2

REF: 081910ai

TOP: Graphing Quadratic Functions

KEY: key features

91 ANS:

$$-13x^2 + 34x - 29$$

$$3(x^2 + 2x - 3) - 4(4x^2 - 7x + 5) = 3x^2 + 6x - 9 - 16x^2 + 28x - 20 = -13x^2 + 34x - 29$$

PTS: 2

REF: 061803ai

TOP: Operations with Polynomials

KEY: subtraction

92 ANS:

$$(m - 16)(m + 4)$$

PTS: 2

REF: 081803ai

TOP: Factoring Polynomials

KEY: quadratic

93 ANS:

exponential

PTS: 2

REF: 081907ai

TOP: Families of Functions

94 ANS:

153

$$k(9) = 2(9)^2 - 3\sqrt{9} = 162 - 9 = 153$$

PTS: 2

REF: 061802ai

TOP: Functional Notation

95 ANS:

2 units right and 3 units up

PTS: 2

REF: 081808ai

TOP: Graphing Polynomial Functions

96 ANS:

 d

$$31 = 4 + (10 - 1)3$$

PTS: 2

REF: 062118ai

TOP: Sequences

KEY: explicit

97 ANS:

I and III, only

PTS: 2

REF: 061919ai

TOP: Sequences

KEY: difference or ratio

98 ANS:
distributive property of multiplication over subtraction

PTS: 2 REF: 011801ai TOP: Identifying Properties

99 ANS:
-2
 $f(-2) = -3(-2)^2 + 10 = -12 + 10 = -2$

PTS: 2 REF: 012304ai TOP: Functional Notation

100 ANS:
month
$$\left(\frac{\$1824 - 1140}{3 - 0 \text{ yr}} \right) \left(\frac{1 \text{ yr}}{12 \text{ m}} \right) = \frac{\$19}{\text{m}}$$

PTS: 2 REF: 062105ai TOP: Rate of Change

101 ANS:
$$\frac{30,000 \text{ items}}{1 \text{ week}} \cdot \frac{1 \text{ week}}{7 \text{ days}} \cdot \frac{1 \text{ day}}{24 \text{ hrs}} \cdot \frac{1 \text{ hr}}{60 \text{ min}}$$

PTS: 2 REF: 062309ai TOP: Conversions KEY: dimensional analysis

102 ANS:
3

PTS: 2 REF: 082309ai TOP: Modeling Expressions

103 ANS:
exponential

PTS: 2 REF: 012316ai TOP: Families of Functions

104 ANS:
$$\frac{1500 \text{ meters}}{15.42 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hour}} \cdot \frac{3.281 \text{ feet}}{1 \text{ meter}} \cdot \frac{1 \text{ mile}}{5280 \text{ feet}}$$

PTS: 2 REF: 082221ai TOP: Conversions

105 ANS:
 $h + p \geq 200$

PTS: 2 REF: 012324ai TOP: Modeling Systems of Linear Inequalities

106 ANS:
-143
 $a_{24} = -5 + (24 - 1)(-6) = -143$

PTS: 2 REF: 062305ai TOP: Sequences KEY: explicit

107 ANS:
 2
 $-4.9(0)^2 + 50(0) + 2$

PTS: 2
 KEY: key features

REF: 011811ai

TOP: Graphing Quadratic Functions

108 ANS:
 $3y = -4x + 15$
 $y + 3 = -\frac{4}{3}(x - 6)$
 $3y + 9 = -4x + 24$
 $3y = -4x + 15$

PTS: 2
 KEY: other forms

REF: 082321ai

TOP: Writing Linear Equations

109 ANS:
 inches per minute

PTS: 2

REF: 011924ai

TOP: Conversions KEY: dimensional analysis

110 ANS:
 I, II, and III

PTS: 2

REF: 061823ai

TOP: Transforming Formulas

111 ANS:
 $3.50H + 2.50P = 43$
 $H + P = 14$

PTS: 2

REF: 011803ai

TOP: Modeling Linear Systems

112 ANS:
 exponential

PTS: 2

REF: 062117ai

TOP: Families of Functions

113 ANS:
 45.2
 $\frac{38}{84} \approx 45.2\%$

PTS: 2

REF: 062317ai

TOP: Frequency Tables

KEY: two-way

114 ANS:

$$3.5$$

$$\frac{5(2x-4)}{3} = 5$$

$$10x - 20 = 15$$

$$10x = 35$$

$$x = 3.5$$

PTS: 2

REF: 082304ai

TOP: Solving Linear Equations

115 ANS:

$$0 \leq t \leq 2$$

PTS: 2

REF: 081918ai

TOP: Relating Graphs to Events

116 ANS:

$$[2, \infty)$$

PTS: 2

REF: 061816ai

TOP: Domain and Range

KEY: real domain, quadratic

117 ANS:

$$p < 4$$

$$4p + 2 < 2p + 10$$

$$2p < 8$$

$$p < 4$$

PTS: 2

REF: 061801ai

TOP: Solving Linear Inequalities

118 ANS:

$$f(x) = (x+1)(x-3)$$

PTS: 2

REF: 082315ai

TOP: Graphing Quadratic Functions

KEY: key features

119 ANS:

$$0.6$$

$$\frac{22.7 \text{ m}}{\text{hr}} \times \frac{1 \text{ hr}}{60 \text{ min}} \times \frac{1.609 \text{ km}}{1 \text{ m}} = \frac{0.6 \text{ km}}{\text{min}}$$

PTS: 2

REF: 062123ai

TOP: Conversions KEY: dimensional analysis

120 ANS:

$$2x^2 + 2x + 10$$

$$5x^2 - x + 4 - 3x^2 + 3x + 6 = 2x^2 + 2x + 10$$

PTS: 2

REF: 062304ai

TOP: Operations with Polynomials

KEY: subtraction

- 121 ANS:
7 units below the vertex of $f(x)$
 $-5 - 2 = -7$
- PTS: 2 REF: 081905ai TOP: Graphing Polynomial Functions
- 122 ANS:
 $r(x)$, and the value is -16
- The minimum of $r(x)$ is -16 . The minimum of $q(x)$ is $-9 \left(x = \frac{-2}{2(1)} = -1, q(-1) = -9 \right)$.
- PTS: 2 REF: 081917ai TOP: Comparing Quadratic Functions
- 123 ANS:
 $[0,4]$
- PTS: 2 REF: 082222ai TOP: Domain and Range
KEY: graph
- 124 ANS:
 $\{-16, -12, -4\}$
 $f(-2) = f(-1) = -16, f(0) = -12, f(1) = -4$
- PTS: 2 REF: 011914ai TOP: Domain and Range
KEY: limited domain
- 125 ANS:
19
 $f(2) = 2(3^2) + 1 = 19$
- PTS: 2 REF: 012001ai TOP: Functional Notation
- 126 ANS:
nonnegative rational numbers
- PTS: 2 REF: 082322ai TOP: Domain and Range
KEY: context
- 127 ANS:
positive rational numbers
- PTS: 2 REF: 061920ai TOP: Domain and Range
KEY: context
- 128 ANS:
60
The value of the third quartile is the last vertical line of the box.
- PTS: 2 REF: 082307ai TOP: Box Plots KEY: interpret

129 ANS:

$$x \leq -15$$

$$-\frac{2}{5}x \geq \frac{1}{3}x + 11$$

$$-\frac{11}{15}x \geq 11$$

$$-\frac{15}{11} \left(-\frac{11}{15}x \right) \leq \left(-\frac{15}{11} \right) 11$$

$$x \leq -15$$

PTS: 2

REF: 062322ai

TOP: Solving Linear Inequalities

130 ANS:

$$2x^2 + x - 21$$

$$(2x + 7)(x - 3) = 2x^2 - 6x + 7x - 21 = 2x^2 + x - 21$$

PTS: 2

REF: 082308ai

TOP: Operations with Polynomials

KEY: multiplication

131 ANS:

II and III

$$\text{I. } f(4) = -\frac{4}{3} \text{ and } g(4) = 2; \text{ II. } f(12) = 4 \text{ and } g(12) = 4$$

PTS: 2

REF: 062111ai

TOP: Other Systems

132 ANS:

$$1.75 + 0.10d \geq 3.00$$

PTS: 2

REF: 062314ai

TOP: Modeling Linear Inequalities

133 ANS:

65

$$d = \frac{37-31}{6-3} = 2 \quad a_n = 2n + 25$$

$$a_{20} = 2(20) + 25 = 65$$

PTS: 2

REF: 061807ai

TOP: Sequences

KEY: explicit

134 ANS:

D and *B*

PTS: 2

REF: 082219ai

TOP: Identifying Properties

135 ANS:

the height from which the ball is thrown

PTS: 2

REF: 012315ai

TOP: Graphing Quadratic Functions

KEY: key features

- 136 ANS:
Emily, only
- PTS: 2 REF: 012308ai TOP: Families of Functions
- 137 ANS:
II and IV
- PTS: 2 REF: 011908ai TOP: Identifying Properties
- 138 ANS:
36
 $K(-3) = 2(-3)^2 - 5(-3) + 3 = 18 + 15 + 3 = 36$
- PTS: 2 REF: 062103ai TOP: Functional Notation
- 139 ANS:
 $-27 + 15(n - 1)$
- PTS: 2 REF: 081820ai TOP: Sequences KEY: explicit
- 140 ANS:
 $y = 64(1 - .5)^3$
- PTS: 2 REF: 012002ai TOP: Modeling Exponential Functions
- 141 ANS:
A and C, only
- PTS: 2 REF: 011909ai TOP: Solving Quadratics
KEY: graph
- 142 ANS:
 $f(x), h(x), g(x)$
- PTS: 2 REF: 082211ai TOP: Graphing Polynomial Functions
- 143 ANS:
 -1 and -7
 $(x + 4)^2 = 9$
 $x + 4 = \pm 3$
 $x = -1, -7$
- PTS: 2 REF: 012015ai TOP: Solving Quadratics
KEY: taking square roots
- 144 ANS:
whole numbers
- PTS: 2 REF: 062116ai TOP: Domain and Range
KEY: context
- 145 ANS:
6
- PTS: 2 REF: 082208ai TOP: Modeling Expressions

146 ANS:

$$m^2 - 6m + 9$$

PTS: 2

REF: 062217ai

TOP: Operations with Polynomials

KEY: multiplication

147 ANS:

$$x < 4$$

$$-3(x - 6) > 2x - 2$$

$$-3x + 18 > 2x - 2$$

$$20 > 5x$$

$$4 > x$$

PTS: 2

REF: 082310ai

TOP: Solving Linear Inequalities

148 ANS:

$$3x^2 - 6x + 14$$

$$(3x^2 + 4x - 8) + 22 - 10x = 3x^2 - 6x + 14$$

PTS: 2

REF: 082302ai

TOP: Operations with Polynomials

KEY: addition

149 ANS:

$$x(2x - 6) = 1100$$

PTS: 2

REF: 082306ai

TOP: Geometric Applications of Quadratics

150 ANS:

$$29,873(1 - .20)^t$$

PTS: 2

REF: 012311ai

TOP: Modeling Exponential Functions

151 ANS:

$$(4w + 1)(w - 3)$$

PTS: 2

REF: 061917ai

TOP: Factoring Polynomials

KEY: quadratic

152 ANS:

$$90$$

PTS: 2

REF: 061805ai

TOP: Box Plots

KEY: interpret

153 ANS:

$$\left\{-\frac{4}{3}, 2\right\}$$

$$2x - 4 = 0 \quad 3x + 4 = 0$$

$$x = 2$$

$$x = -\frac{4}{3}$$

PTS: 2

REF: 062212ai

TOP: Zeros of Polynomials

154 ANS:

 $f(x)$, $q(x)$, and $p(x)$

$$f(4) = q(4) = p(4) = 3$$

PTS: 2

REF: 011921ai

TOP: Comparing Functions

155 ANS:

$$x \geq -1$$

PTS: 2

REF: 011917ai

TOP: Domain and Range

KEY: graph

156 ANS:

$$(6x + 3)(6x - 3)$$

PTS: 2

REF: 082203ai

TOP: Factoring the Difference of Perfect Squares

KEY: quadratic

157 ANS:

6

$$116(30) + 439L \leq 6500$$

$$439L \leq 3020$$

$$L \leq 6.879$$

PTS: 2

REF: 011904ai

TOP: Modeling Linear Inequalities

158 ANS:

0.4

$$\frac{3}{5} \left(x + \frac{4}{3} \right) = 1.04$$

$$3 \left(x + \frac{4}{3} \right) = 5.2$$

$$3x + 4 = 5.2$$

$$3x = 1.2$$

$$x = 0.4$$

PTS: 2

REF: 011905ai

TOP: Solving Linear Equations

KEY: decimals

159 ANS:

38.2

$$\frac{26}{42 + 26} = 0.382$$

PTS: 2

REF: 061912ai

TOP: Frequency Tables

KEY: two-way

160 ANS:

39.6%

$$\frac{58 + 41}{42 + 58 + 20 + 84 + 41 + 5} = \frac{99}{250} = 0.396$$

PTS: 2

REF: 061809ai

TOP: Frequency Tables

KEY: two-way

161 ANS:

every day

$$1000(0.5)^{2t} = 1000(0.5^2)^t = 1000(0.25)^t$$

PTS: 2

REF: 011923ai

TOP: Modeling Exponential Functions

162 ANS:

3

$$\frac{17 - 5}{5 - 1} = \frac{12}{4} = 3$$

PTS: 2

REF: 062215ai

TOP: Sequences

KEY: difference or ratio

163 ANS:

$$2a^2 + 2a - 11$$

$$2a^2 - 5 - 2(3 - a) = 2a^2 - 5 - 6 + 2a = 2a^2 + 2a - 11$$

PTS: 2

REF: 011911ai

TOP: Operations with Polynomials

KEY: subtraction

164 ANS:

$$c(s) = 0.75s + 5.75$$

PTS: 2

REF: 062203ai

TOP: Modeling Linear Functions

165 ANS:

$$\frac{5 \pm \sqrt{41}}{2}$$

$$\frac{5 \pm \sqrt{(-5)^2 - 4(1)(-4)}}{2(1)} = \frac{5 \pm \sqrt{41}}{2}$$

PTS: 2

REF: 061921ai

TOP: Solving Quadratics

KEY: quadratic formula

166 ANS:

2

$$-2 + 8x = 3x + 8$$

$$5x = 10$$

$$x = 2$$

PTS: 2

REF: 081804ai

TOP: Solving Linear Equations

KEY: integral expressions

167 ANS:

$$b < 8$$

$$\frac{3}{2}b < 12$$

$$b < 12\left(\frac{2}{3}\right)$$

$$b < 8$$

PTS: 2

REF: 062207ai

TOP: Solving Linear Inequalities

168 ANS:

36

The value of the third quartile is the last vertical line of the box.

PTS: 2

REF: 012306ai

TOP: Box Plots

KEY: interpret

169 ANS:

{0,10,42}

$$f(-2) = 0, f(3) = 10, f(5) = 42$$

PTS: 2

REF: 011812ai

TOP: Domain and Range

KEY: limited domain

170 ANS:

-2

PTS: 2

REF: 012007ai

TOP: Graphing Polynomial Functions

171 ANS:

increasing by 5%

PTS: 2

REF: 082312ai

TOP: Modeling Exponential Functions

172 ANS:

$$23x + 250$$

PTS: 2

REF: 081901ai

TOP: Modeling Expressions

173 ANS:

II and III, only

$$10(x - 5) = -15 \quad 4 + 2(x - 2) = 9 \quad \frac{1}{3}x = \frac{3}{2}$$

$$10x - 50 = -15 \quad 4 + 2x - 4 = 9 \quad x = \frac{9}{2}$$

$$10x = 35 \quad 2x = 9$$

$$x = \frac{7}{2} \quad x = \frac{9}{2}$$

PTS: 2

REF: 082217ai

TOP: Solving Linear Equations

174 ANS:

shifted 3 units to the right

PTS: 2

REF: 061904ai

TOP: Graphing Polynomial Functions

175 ANS:

$$2x^2 - 11x - 15$$

$$2x^2 - 8x - 3x - 15$$

$$2x^2 - 11x - 15$$

PTS: 2

REF: 012301ai

TOP: Operations with Polynomials

KEY: subtraction

176 ANS:

$$-64x^6$$

PTS: 2

REF: 062114ai

TOP: Powers of Powers

177 ANS:

$$g(x) = x(x + 3)(x - 4)$$

PTS: 2

REF: 012322ai

TOP: Zeros of Polynomials

178 ANS:

$$\{\pm 6\}$$

$$2x^2 = 72$$

$$x^2 = 36$$

$$x = \pm 6$$

PTS: 2

REF: 062318ai

TOP: Solving Quadratics

KEY: taking square roots

179 ANS:

$$A(w) = w^2 + 7w$$

$$w(w + 7) = w^2 + 7w$$

PTS: 2

REF: 081920ai

TOP: Geometric Applications of Quadratics

180 ANS:

$$14$$

$$f(8) = \frac{3(8) + 4}{2} = \frac{28}{2} = 14$$

PTS: 2

REF: 082201ai

TOP: Functional Notation

181 ANS:

$$0 \leq t \leq 14$$

PTS: 2

REF: 012021ai

TOP: Domain and Range

KEY: context

182 ANS:

$$\frac{6x^3 + 4x^2 - 34}{2(3x^3 + 2x^2 - 17)}$$

PTS: 2

REF: 081813ai

TOP: Operations with Polynomials

KEY: addition

Algebra I Regents Bimodal Worksheets

Answer Section

183 ANS:

 $h(x)$, $f(x)$, $g(x)$

Over the interval $0 \leq x \leq 3$, the average rate of change for $h(x) = \frac{9-2}{3-0} = \frac{7}{3}$, $f(x) = \frac{7-1}{3-0} = \frac{6}{3} = 2$, and

$$g(x) = \frac{3-0}{3-0} = \frac{3}{3} = 1.$$

PTS: 2

REF: spr1301ai

TOP: Rate of Change

184 ANS:

 -7 and 3

$$(x+2)^2 - 25 = 0$$

$$((x+2)+5)((x+2)-5) = 0$$

$$x = -7, 3$$

PTS: 2

REF: 081418ai

TOP: Zeros of Polynomials

185 ANS:

 -1 and 2

$$3x^2 - 3x - 6 = 0$$

$$3(x^2 - x - 2) = 0$$

$$3(x-2)(x+1) = 0$$

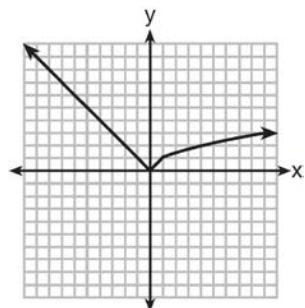
$$x = 2, -1$$

PTS: 2

REF: 081513ai

TOP: Zeros of Polynomials

186 ANS:



PTS: 2

REF: 081516ai

TOP: Graphing Piecewise-Defined Functions

KEY: bimodalgraph

187 ANS:

$$-\frac{5}{6}$$

$$36x^2 = 25$$

$$x^2 = \frac{25}{36}$$

$$x = \pm \frac{5}{6}$$

PTS: 2

REF: 011715ai

TOP: Solving Quadratics

KEY: taking square roots

188 ANS:

4

$$16^{2t} = n^{4t}$$

$$(16^2)^t = (n^4)^t$$

$$((4^2)^2)^t = ((n^2)^2)^t$$

PTS: 2

REF: 011519ai

TOP: Modeling Exponential Functions

189 ANS:

$$y = x^2 + 10x + 24$$

$$(x + 4)(x + 6) = 0$$

$$x^2 + 10x + 24 = 0$$

PTS: 2

REF: spr1303ai

TOP: Zeros of Polynomials

190 ANS:

-2

PTS: 2

REF: 011712ai

TOP: Graphing Absolute Value Functions

191 ANS:

$$x^2 + 8^2 = (x + 2)^2$$

PTS: 2

REF: spr1304ai

TOP: Geometric Applications of Quadratics

192 ANS:

$$a_n = 8n - 14$$

PTS: 2

REF: 081416ai

TOP: Sequences KEY: explicit

193 ANS:

positive integers

PTS: 2

REF: 011615ai

TOP: Domain and Range

KEY: context

194 ANS:

8.3

$$4(x - 7) = 0.3(x + 2) + 2.11$$

$$4x - 28 = 0.3x + 0.6 + 2.11$$

$$3.7x - 28 = 2.71$$

$$3.7x = 30.71$$

$$x = 8.3$$

PTS: 2

REF: 061719ai

TOP: Solving Linear Equations

KEY: decimals

195 ANS:

$$6x^2 - 28x + 30$$

PTS: 2

REF: 011510ai

TOP: Operations with Polynomials

KEY: multiplication

196 ANS:

$$(p^2 + 9)(p + 3)(p - 3)$$

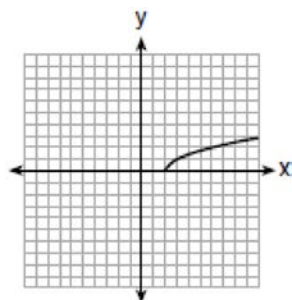
PTS: 2

REF: 011522ai

TOP: Factoring the Difference of Perfect Squares

KEY: higher power

197 ANS:



PTS: 2

REF: 061703ai

TOP: Graphing Root Functions

KEY: bimodalgraph

198 ANS:

$$-2 \pm 2\sqrt{5}$$

$$x^2 + 4x = 16$$

$$x^2 + 4x + 4 = 16 + 4$$

$$(x + 2)^2 = 20$$

$$x + 2 = \pm\sqrt{4 \cdot 5}$$

$$= -2 \pm 2\sqrt{5}$$

PTS: 2

REF: 061410ai

TOP: Solving Quadratics

KEY: completing the square

199 ANS:
 $1.25r + 2g \leq 50$
 $r \geq 10$
 $g \geq 12$

PTS: 2 REF: 081810ai TOP: Modeling Systems of Linear Inequalities

200 ANS:

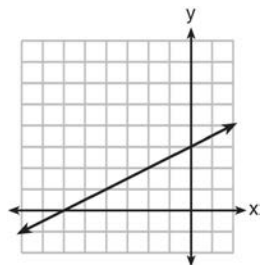
$$\frac{P_1 V_1}{V_2}$$

PTS: 2 REF: 011704ai TOP: Transforming Formulas

201 ANS:
 I, II, and III

PTS: 2 REF: 081709ai TOP: Modeling Linear Functions

202 ANS:



PTS: 2 REF: 081413ai TOP: Graphing Linear Functions
 KEY: bimodalgraph

203 ANS:
 $x^2 + 12x - 9$
 $5x^2 - (4x^2 - 12x + 9) = x^2 + 12x - 9$

PTS: 2 REF: 011610ai TOP: Operations with Polynomials
 KEY: multiplication

204 ANS:
 $x = 4 \pm 2\sqrt{10}$
 $x^2 - 8x + 16 = 24 + 16$
 $(x - 4)^2 = 40$
 $x - 4 = \pm\sqrt{40}$
 $x = 4 \pm 2\sqrt{10}$

PTS: 2 REF: 061523ai TOP: Solving Quadratics
 KEY: completing the square

205 ANS:

$$f(t) = 25^{t+1}$$

PTS: 2

REF: 061513ai

TOP: Families of Functions

206 ANS:

whole numbers

PTS: 2

REF: 011719ai

TOP: Domain and Range

KEY: context

207 ANS:

greater than or equal to -9

$$f(x) = x^2 + 2x - 8 = x^2 + 2x + 1 - 9 = (x + 1)^2 - 9$$

PTS: 2

REF: 061611ai

TOP: Domain and Range

KEY: real domain, quadratic

208 ANS:

$$h < 14$$

$$2h + 8 > 3h - 6$$

$$14 > h$$

$$h < 14$$

PTS: 2

REF: 081607ai

TOP: Solving Linear Inequalities

209 ANS:

$$4(2x + 3)(2x - 3)$$

$$16x^2 - 36 = 4(2x + 3)(2x - 3)$$

PTS: 2

REF: 011701ai

TOP: Factoring the Difference of Perfect Squares

KEY: quadratic

210 ANS:

quadratic

PTS: 2

REF: 061624ai

TOP: Families of Functions

211 ANS:

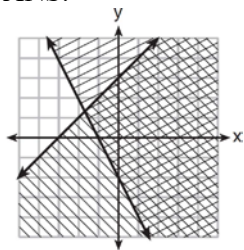
y is the total cost, x is the number of months of service, \$40 is the installation fee, and \$90 is the service charge per month.

PTS: 2

REF: 081402ai

TOP: Modeling Linear Functions

212 ANS:



PTS: 2 REF: 081506ai TOP: Graphing Systems of Linear Inequalities
KEY: bimodalgraph | graph

213 ANS:

$$\frac{5280 \text{ ft}}{1 \text{ mi}}$$

PTS: 2 REF: 011502ai TOP: Conversions KEY: dimensional analysis

214 ANS:

65

$$a + p = 165 \quad 1.75(165 - p) + 2.5p = 337.5$$

$$1.75a + 2.5p = 337.5 \quad 288.75 - 1.75p + 2.5p = 337.5$$

$$0.75p = 48.75$$

$$p = 65$$

PTS: 2 REF: 061506ai TOP: Modeling Linear Systems

215 ANS:

$$P(x) = -0.5x^2 + 500x - 350$$

$$P(x) = -0.5x^2 + 800x - 100 - (300x + 250) = -0.5x^2 + 500x - 350$$

PTS: 2 REF: 081406ai TOP: Operations with Functions

216 ANS:

The graph of $f(x)$ is narrower than the graph of $g(x)$, and its vertex is moved to the right 2 units and up 1 unit.

PTS: 2 REF: 011512ai TOP: Graphing Polynomial Functions

217 ANS:

$$x \geq 11$$

$$3x + 2 \leq 5x - 20$$

$$22 \leq 2x$$

$$11 \leq x$$

PTS: 2 REF: 061609ai TOP: Solving Linear Inequalities

218 ANS:

1.7%

PTS: 2 REF: 061517ai TOP: Modeling Exponential Functions

219 ANS:
addition property of equality

PTS: 2 REF: 061401ai TOP: Identifying Properties

220 ANS:
 $y \geq 2x - 3$

PTS: 2 REF: 011605ai TOP: Graphing Linear Inequalities

221 ANS:
 $\{0, 1, 4\}$

PTS: 2 REF: 081710ai TOP: Domain and Range
KEY: limited domain

222 ANS:
2589
 $25,000(0.86)^2 - 25,000(0.86)^3 = 18490 - 15901.40 = 2588.60$

PTS: 2 REF: 011508ai TOP: Functional Notation

223 ANS:
3 and -1
 $2x^2 - 4x - 6 = 0$

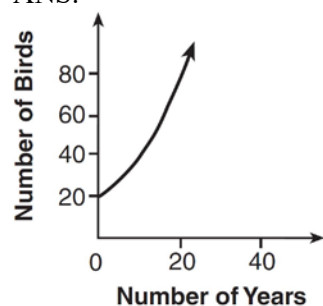
$$2(x^2 - 2x - 3) = 0$$

$$2(x - 3)(x + 1) = 0$$

$$x = 3, -1$$

PTS: 2 REF: 011609ai TOP: Zeros of Polynomials

224 ANS:



PTS: 2 REF: 081410ai TOP: Families of Functions
KEY: bimodalgraph

225 ANS:
 $8x^3 + 2x^2 - 3x + 18$
 $(2x + 3)(4x^2 - 5x + 6) = 8x^3 - 10x^2 + 12x + 12x^2 - 15x + 18 = 8x^3 + 2x^2 - 3x + 18$

PTS: 2 REF: 081612ai TOP: Operations with Polynomials
KEY: multiplication

226 ANS:
whole numbers

PTS: 2

REF: 011506ai

TOP: Domain and Range

KEY: context

227 ANS:

2 and -6

$$2(x+2)^2 = 32$$

$$(x+2)^2 = 16$$

$$x+2 = \pm 4$$

$$x = -6, 2$$

PTS: 2

REF: 061619ai

TOP: Solving Quadratics

KEY: taking square roots

228 ANS:

2

PTS: 2

REF: 011601ai

TOP: Vertex Form of a Quadratic

229 ANS:

$\frac{2}{3}$ and -4

$$3x^2 + 10x - 8 = 0$$

$$(3x-2)(x+4) = 0$$

$$x = \frac{2}{3}, -4$$

PTS: 2

REF: 081619ai

TOP: Solving Quadratics

KEY: factoring

230 ANS:

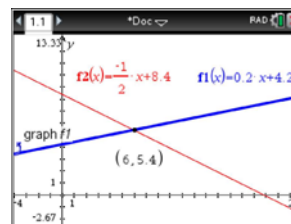
$$c = 60 + 0.05d$$

PTS: 2

REF: 061422ai

TOP: Modeling Linear Equations

231 ANS:
(6.0,5.4)



$$m = \frac{5 - 4.6}{4 - 2} = \frac{.4}{2} = 0.2 \quad 4(0.2x + 4.2) + 2x = 33.6 \quad y = 0.2(6) + 4.2 = 5.4$$

$$5 = 2(4) + b$$

$$0.8x + 16.8 + 2x = 33.6$$

$$4.2 = b$$

$$2.8x = 16.8$$

$$y = 0.2x + 4.2$$

$$x = 6$$

PTS: 2 REF: 061618ai TOP: Solving Linear Systems
KEY: substitution

232 ANS:

$$f(x) = 3(x + 2)^2 - 1$$

$$3(x^2 + 4x + 4) - 12 + 11$$

$$3(x + 2)^2 - 1$$

PTS: 2 REF: 081621ai TOP: Vertex Form of a Quadratic

233 ANS:

$$2x^2 + 7x - 13$$

$$3(x^2 - 1) - (x^2 - 7x + 10)$$

$$3x^2 - 3 - x^2 + 7x - 10$$

$$2x^2 + 7x - 13$$

PTS: 2 REF: 061610ai TOP: Operations with Polynomials
KEY: subtraction

234 ANS:

20° Celsius

$$C(68) = \frac{5}{9}(68 - 32) = 20$$

PTS: 2 REF: 011710ai TOP: Conversions KEY: formula

235 ANS:

hours worked per week

PTS: 2 REF: 011501ai TOP: Modeling Linear Functions

236 ANS:

$$f(t) = (9.05 \times 10^6)(1 + 0.031)^7$$

PTS: 2 REF: 081507ai TOP: Modeling Exponential Functions

237 ANS:

$$a + c = 150$$

$$10.25a + 7.75c = 1470$$

PTS: 2

REF: 061605ai

TOP: Modeling Linear Systems

238 ANS:

$$0.05(x + 4) + 0.10(x) = \$1.25$$

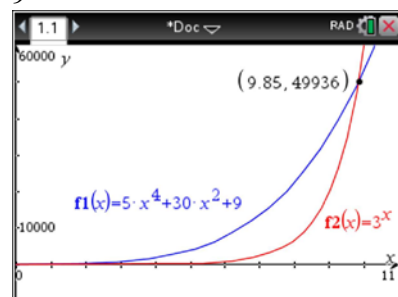
PTS: 2

REF: 061416ai

TOP: Modeling Linear Equations

239 ANS:

9



PTS: 2

REF: 061621ai

TOP: Families of Functions

240 ANS:

$$\frac{I}{Pt}$$

PTS: 2

REF: 011606ai

TOP: Transforming Formulas

241 ANS:

It decreases 22% per year.

PTS: 2

REF: 081624ai

TOP: Modeling Exponential Functions

242 ANS:

$$x > 9$$

$$7 - \frac{2}{3}x < x - 8$$

$$15 < \frac{5}{3}x$$

$$9 < x$$

PTS: 2

REF: 011507ai

TOP: Solving Linear Inequalities

243 ANS:

$$a_n = 4n + 8$$

PTS: 2

REF: 061424ai

TOP: Sequences

KEY: explicit

244 ANS:
wider and opens downward

PTS: 2 REF: 081417ai TOP: Graphing Polynomial Functions

245 ANS:
 $0 \leq t \leq 1.5$
 $0 = -16t^2 + 24t$
 $0 = -8t(2t - 3)$
 $t = 0, \frac{3}{2}$

PTS: 2 REF: 061724ai TOP: Graphing Quadratic Functions
KEY: key features

246 ANS:
 $2.5 < x < 5.5$

PTS: 2 REF: 061409ai TOP: Graphing Quadratic Functions
KEY: key features

247 ANS:
 3
 $m = \frac{3 - -7}{2 - 4} = -5$ $3 = (-5)(2) + b$ $y = -5x + 13$ represents the line passing through the points (2,3) and (4,-7). The
 $b = 13$
fourth equation may be rewritten as $y = 5x - 13$, so is a different line.

PTS: 2 REF: 081720ai TOP: Writing Linear Equations
KEY: other forms

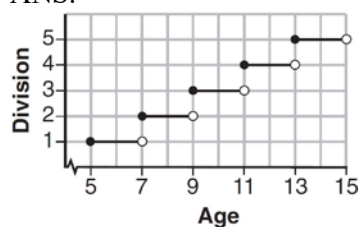
248 ANS:
 $y \geq -3x + 4$

PTS: 2 REF: 061505ai TOP: Graphing Linear Inequalities

249 ANS:
 $x^2 - 5x + 3 = 0$
 $x^2 - 5x = -3$
 $x^2 - 5x + \frac{25}{4} = \frac{-12}{4} + \frac{25}{4}$
 $\left(x - \frac{5}{2}\right)^2 = \frac{13}{4}$

PTS: 2 REF: 061518ai TOP: Solving Quadratics
KEY: completing the square

250 ANS:



PTS: 2

REF: 061507ai

TOP: Graphing Step Functions

KEY: bimodalgraph

251 ANS:

$$c(z) = 0.20(z - 1) + 0.46$$

PTS: 2

REF: 011523ai

TOP: Modeling Linear Functions

252 ANS:

$$2lw$$

PTS: 2

REF: 061702ai

TOP: Dependent and Independent Variables

253 ANS:

$$6$$

$$x^2 - 12x + 7$$

$$x^2 - 12x + 36 - 29$$

$$(x - 6)^2 - 29$$

PTS: 2

REF: 081520ai

TOP: Vertex Form of a Quadratic

254 ANS:

$$(7x - 6)(7x + 6)$$

PTS: 2

REF: 081703ai

TOP: Factoring the Difference of Perfect Squares

KEY: quadratic

255 ANS:

Pelican Beach

PTS: 2

REF: 011514ai

TOP: Central Tendency and Dispersion

256 ANS:

$$(3m - 10)(3m + 10)$$

PTS: 2

REF: 062301ai

TOP: Factoring the Difference of Perfect Squares

257 ANS:

$$27$$

$$f(8) = \frac{1}{2}(8)^2 - \left(\frac{1}{4}(8) + 3\right) = 32 - 5 = 27$$

PTS: 2

REF: 081704ai

TOP: Functional Notation

258 ANS:

60

$$\frac{30}{30 + 12 + 8} = 0.6$$

PTS: 2

REF: 061615ai

TOP: Frequency Tables

KEY: two-way

259 ANS:

$$x^2 - 8(x - 1) = 17$$

PTS: 2

REF: 081723ai

TOP: Modeling Quadratics

260 ANS:

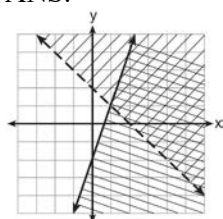
-0.93

PTS: 2

REF: 061411ai

TOP: Correlation Coefficient

261 ANS:



PTS: 2

REF: 061404ai

TOP: Graphing Systems of Linear Inequalities

KEY: bimodalgraph | graph

262 ANS:

-5 and 5

PTS: 2

REF: 081403ai

TOP: Solving Quadratics

KEY: taking square roots

263 ANS:

$$r = \sqrt{\frac{V}{\pi h}}$$

PTS: 2

REF: 011516ai

TOP: Transforming Formulas

264 ANS:

$$4.50 + 0.79r \leq 16.00; 14 \text{ rides}$$

PTS: 2

REF: 011513ai

TOP: Modeling Linear Inequalities

265 ANS:

 -2

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

$$\frac{1}{2}x + 3 = x \quad -x - 6 = 2x$$

$$-6 = 3x$$

$$x + 6 = 2x$$

$$-2 = x$$

$$6 = x$$

PTS: 2

REF: 011617ai

TOP: Other Systems

266 ANS:

$$\frac{120 \text{ ft}^3}{1} \cdot \frac{1 \text{ load}}{8 \text{ ft}^3} \cdot \frac{10 \text{ min}}{1 \text{ load}} \cdot \frac{1 \text{ hr}}{60 \text{ min}}$$

PTS: 2

REF: 061720ai

TOP: Conversions KEY: dimensional analysis

267 ANS:

28%

$$\frac{14}{16 + 20 + 14} = 28\%$$

PTS: 2

REF: 011705ai

TOP: Frequency Tables

KEY: two-way

268 ANS:

$$3 \pm 2\sqrt{7}$$

$$x^2 - 6x = 19$$

$$x^2 - 6x + 9 = 19 + 9$$

$$(x - 3)^2 = 28$$

$$x - 3 = \pm\sqrt{4 \cdot 7}$$

$$x = 3 \pm 2\sqrt{7}$$

PTS: 2

REF: fall1302ai

TOP: Solving Quadratics

KEY: quadratic formula

269 ANS:

13

$$w = 2(3) + 7 = 13$$

PTS: 2

REF: 012302ai

TOP: Identifying Solutions

270 ANS:

I, only

PTS: 2

REF: 011623ai

TOP: Families of Functions

271 ANS:
 $C = 62 + 30(g - 2)$

PTS: 2 REF: 081508ai TOP: Modeling Linear Equations

272 ANS:
 $x(x + 2)(x - 15)$

PTS: 2 REF: 011612ai TOP: Factoring Polynomials
 KEY: higher power

273 ANS:
 $f(x) = x(x + 3)(x - 4)$

PTS: 2 REF: 061710ai TOP: Zeros of Polynomials

274 ANS:
 II and IV

PTS: 2 REF: 081511ai TOP: Defining Functions
 KEY: mixed

275 ANS:
 speed of the car

PTS: 2 REF: 011709ai TOP: Modeling Linear Functions

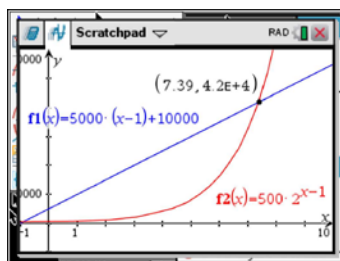
276 ANS:
 exponential growth function

PTS: 2 REF: 061406ai TOP: Families of Functions

277 ANS:
 $p(t) = 100(3)^t$

PTS: 2 REF: 081714ai TOP: Families of Functions

278 ANS:
 8



x	$A = 5000(x - 1) + 10000$	$B = 500(2)^{x-1}$
6	35,000	16,000
7	40,000	32,000
8	45,000	64,000
9	50,000	128,000

PTS: 2 REF: 081518ai TOP: Families of Functions

279 ANS:

up

PTS: 2

REF: 081501ai

TOP: Graphing Polynomial Functions

280 ANS:

$$(10+x)(12+x) = 180$$

PTS: 2

REF: 011611ai

TOP: Geometric Applications of Quadratics

281 ANS:

$$x \leq -\frac{18}{5}$$

$$2 + \frac{4}{9}x \geq 4 + x$$

$$-2 \geq \frac{5}{9}x$$

$$x \leq -\frac{18}{5}$$

PTS: 2

REF: 081711ai

TOP: Solving Linear Inequalities

282 ANS:

II, only

$$\text{I. } -\frac{5}{8} + \frac{3}{5} = \frac{-1}{40}; \text{ III. } (\sqrt{5}) \cdot (\sqrt{5}) = \frac{5}{1}; \text{ IV. } 3 \cdot (\sqrt{49}) = \frac{21}{1}$$

PTS: 2

REF: 011604ai

TOP: Operations with Radicals

KEY: classify

283 ANS:

$$12x - 24 = 60$$

PTS: 2

REF: 081616ai

TOP: Modeling Linear Equations

284 ANS:

nonnegative rational numbers

PTS: 2

REF: 061623ai

TOP: Domain and Range

KEY: context

285 ANS:

$$[-5, \infty)$$

PTS: 2

REF: 012018ai

TOP: Domain and Range

KEY: real domain, absolute value

286 ANS:

$$F(x) = 2^x + 1$$

PTS: 2

REF: 061415ai

TOP: Families of Functions

287 ANS:

$$\frac{-1 \pm \sqrt{2\left(\frac{1}{2}\right) + 3}}{6\left(\frac{1}{2}\right) - 5} = \frac{\sqrt{4}}{-2} = \frac{2}{-2} = -1$$

PTS: 2

REF: 081512ai

TOP: Functional Notation

288 ANS:

2% growth

PTS: 2

REF: 011608ai

TOP: Modeling Exponential Functions

289 ANS:

A

PTS: 2

REF: 061420ai

TOP: Functional Notation

290 ANS:

$$4 \pm \sqrt{26}$$

$$x^2 - 8x + 16 = 10 + 16$$

$$(x - 4)^2 = 26$$

$$x - 4 = \pm \sqrt{26}$$

$$x = 4 \pm \sqrt{26}$$

PTS: 2

REF: 061722ai

TOP: Solving Quadratics

KEY: completing the square

291 ANS:

$$-3 \pm \sqrt{7}$$

PTS: 2

REF: 081523ai

TOP: Solving Quadratics

KEY: taking square roots

292 ANS:

$$3x^2 - 14x + 14$$

$$3(x^2 - 4x + 4) - 2x + 2 = 3x^2 - 12x + 12 - 2x + 2 = 3x^2 - 14x + 14$$

PTS: 2

REF: 081524ai

TOP: Operations with Polynomials

KEY: multiplication

293 ANS:

whole numbers greater than or equal to one

PTS: 2

REF: 081620ai

TOP: Domain and Range

KEY: context

294 ANS:

$$-2g - 11$$

$$2(3g - 4) - (8g + 3) = 6g - 8 - 8g - 3 = -2g - 11$$

PTS: 2

REF: 011707ai

TOP: Operations with Polynomials

KEY: subtraction

295 ANS:

15 and -2

$$x^2 - 13x - 30 = 0$$

$$(x - 15)(x + 2) = 0$$

$$x = 15, -2$$

PTS: 2

REF: 061510ai

TOP: Zeros of Polynomials

296 ANS:

I, II, and IV

PTS: 2

REF: 081509ai

TOP: Factoring Polynomials

KEY: quadratic

297 ANS:

 -18.825

$$6\left(\frac{5}{6}\left(\frac{3}{8} - x\right) = 16\right)$$

$$8\left(5\left(\frac{3}{8} - x\right) = 96\right)$$

$$15 - 40x = 768$$

$$-40x = 753$$

$$x = -18.825$$

PTS: 2

REF: 081713ai

TOP: Solving Linear Equations

KEY: fractional expressions

298 ANS:

5.4

$$\frac{36.6 - 15}{4 - 0} = \frac{21.6}{4} = 5.4$$

PTS: 2

REF: 061511ai

TOP: Rate of Change

299 ANS:

$$q(x) = -\frac{1}{2}(x - 15)^2 + 25$$

Vertex (15,25), point (10,12.5) $12.5 = a(10 - 15)^2 + 25$

$$-12.5 = 25a$$

$$-\frac{1}{2} = a$$

PTS: 2

REF: 061716ai

TOP: Vertex Form of a Quadratic

300 ANS:

$$4(3x + 5)(3x - 5)$$

$$36x^2 - 100 = 4(9x^2 - 25) = 4(3x + 5)(3x - 5)$$

PTS: 2

REF: 081608ai

TOP: Factoring the Difference of Perfect Squares

KEY: quadratic

301 ANS:

$$3000(1 + 0.02)^{16}$$

PTS: 2

REF: 011504ai

TOP: Modeling Exponential Functions

302 ANS:

-1 and 6

$$f(x) = x^2 - 5x - 6 = (x + 1)(x - 6) = 0$$

$$x = -1, 6$$

PTS: 2

REF: 061612ai

TOP: Zeros of Polynomials

303 ANS:

$$m + f = 3.95$$

$$f + 0.005 = m$$

PTS: 2

REF: 081419ai

TOP: Modeling Linear Systems

304 ANS:

$$f(x) = \begin{cases} x^2, & x < 1 \\ \frac{1}{2}x + \frac{1}{2}, & x > 1 \end{cases}$$

PTS: 2

REF: 081422ai

TOP: Graphing Piecewise-Defined Functions

305 ANS:

$$3x - 1 = \pm 5$$

PTS: 2

REF: 061521ai

TOP: Solving Quadratics

KEY: taking square roots

306 ANS:

$$150(0.85)^m$$

PTS: 2

REF: 081617ai

TOP: Modeling Exponential Functions

307 ANS:

$$\{x|x \geq -4\}$$

PTS: 2

REF: 061509ai

TOP: Domain and Range

KEY: graph

308 ANS:

$$3.00a + 1.50s$$

PTS: 2

REF: 081503ai

TOP: Modeling Expressions

309 ANS:

opens upward and is narrower

PTS: 2

REF: 011717ai

TOP: Graphing Polynomial Functions

310 ANS:

$$\frac{4.5 \text{ hr}}{50 \text{ km}} \bullet \frac{1.609 \text{ km}}{1 \text{ mi}} \bullet \frac{60 \text{ min}}{1 \text{ hr}}$$

PTS: 2

REF: 062222ai

TOP: Conversions KEY: dimensional analysis

311 ANS:

7

$$5r = a_2 \quad a_2 r = 245 \quad 5r = \frac{245}{r}$$

$$a_2 = \frac{245}{r} \quad 5r^2 = 245$$

$$r^2 = 49$$

$$r = \pm 7$$

PTS: 2

REF: 081924ai

TOP: Sequences KEY: difference or ratio

312 ANS:

$$j(x) = (x - 6)^2 - 29, (6, -29)$$

$$j(x) = x^2 - 12x + 36 + 7 - 36$$

$$= (x - 6)^2 - 29$$

PTS: 2

REF: 061616ai

TOP: Vertex Form of a Quadratic

313 ANS:

$$t = \sqrt{\frac{2d}{a}}$$

$$d = \frac{1}{2}at^2$$

$$2d = at^2$$

$$\frac{2d}{a} = t^2$$

$$\sqrt{\frac{2d}{a}} = t$$

PTS: 2

REF: 061519ai

TOP: Transforming Formulas

314 ANS:

$$b = \frac{2V}{ah} - c$$

$$V = \frac{1}{2}a(b+c)h$$

$$2V = a(b+c)h$$

$$\frac{2V}{ah} = b+c$$

$$\frac{2V}{ah} - c = b$$

PTS: 2

REF: 082224ai

TOP: Transforming Formulas

315 ANS:

8.25

$$\frac{7}{3}\left(x + \frac{9}{28}\right) = 20$$

$$\frac{7}{3}x + \frac{3}{4} = \frac{80}{4}$$

$$\frac{7}{3}x = \frac{77}{4}$$

$$x = \frac{33}{4} = 8.25$$

PTS: 2

REF: 061405ai

TOP: Solving Linear Equations

KEY: fractional expressions

316 ANS:

$$280 - 30(w - 1)$$

PTS: 2

REF: 011718ai

TOP: Modeling Expressions

317 ANS:

$$f(x)$$

PTS: 2

REF: 061606ai

TOP: Families of Functions

318 ANS:

distributive property of multiplication over subtraction

PTS: 2

REF: 081701ai

TOP: Identifying Properties

319 ANS:

-1.75 and 4

$$x^2 - 2x - 8 = \frac{1}{4}x - 1$$

$$4x^2 - 8x - 32 = x - 4$$

$$4x^2 - 9x - 28 = 0$$

$$(4x + 7)(x - 4) = 0$$

$$x = -\frac{7}{4}, 4$$

PTS: 2

REF: 081517ai

TOP: Quadratic-Linear Systems

320 ANS:

$$0.75(7) + 1.25b \leq 22$$

PTS: 2

REF: 081505ai

TOP: Modeling Linear Inequalities

321 ANS:

0.2083 minute

$$12.5 \text{ sec} \times \frac{1 \text{ min}}{60 \text{ sec}} = 0.208\bar{3} \text{ min}$$

PTS: 2

REF: 061608ai

TOP: Conversions KEY: dimensional analysis

322 ANS:

$$0 \leq y \leq 8$$

$$f(2) = 0$$

$$f(6) = 8$$

PTS: 2

REF: 081411ai

TOP: Domain and Range

KEY: limited domain

323 ANS:

$$2$$

$$|x + 2| = 3x - 2$$

$$x + 2 = 3x - 2$$

$$4 = 2x$$

$$x = 2$$

PTS: 2

REF: 081702ai

TOP: Other Systems

324 ANS:

$$16$$

$$a_n = 3n + 1$$

$$a_5 = 3(5) + 1 = 16$$

PTS: 2

REF: 061613ai

TOP: Sequences

KEY: explicit

325 ANS:

$$0 \leq t \leq 3$$

$$0 = -16t^2 + 144$$

$$16t^2 = 144$$

$$t^2 = 9$$

$$t = 3$$

PTS: 2

REF: 081423ai

TOP: Domain and Range

KEY: context

326 ANS:

$$m + g \leq 40$$

$$12m + 14g \geq 250$$

PTS: 2

REF: 061711ai

TOP: Modeling Systems of Linear Inequalities

327 ANS:

$$10$$

$$4x - 5(0) = 40$$

$$4x = 40$$

$$x = 10$$

PTS: 2

REF: 081408ai

TOP: Graphing Linear Functions

328 ANS:

$$y = 14.1x + 5.8$$

PTS: 2

REF: 081421ai

TOP: Regression

KEY: linear

329 ANS:

Lynn, only

$$f(3) = -2(3)^2 + 32 = -18 + 32 = 14$$

PTS: 2

REF: 061705ai

TOP: Functional Notation

330 ANS:

4

$$\frac{x-2}{3} = \frac{4}{6}$$

$$6x - 12 = 12$$

$$6x = 24$$

$$x = 4$$

PTS: 2

REF: 081420ai

TOP: Solving Linear Equations

KEY: fractional expressions

331 ANS:

no solution

$$3(-2x + 2x + 8) = 12$$

$$24 \neq 12$$

PTS: 2

REF: 061708ai

TOP: Solving Linear Systems

KEY: substitution

332 ANS:

$$j^2 + 2j = 783$$

PTS: 2

REF: 081409ai

TOP: Modeling Quadratics

333 ANS:

$$\sqrt{\frac{3V}{\pi h}}$$

$$V = \frac{1}{3} \pi r^2 h$$

$$3V = \pi r^2 h$$

$$\frac{3V}{\pi h} = r^2$$

$$\sqrt{\frac{3V}{\pi h}} = r$$

PTS: 2

REF: 061423ai

TOP: Transforming Formulas

334 ANS:

12

$$\frac{0.8(10^2) - 0.8(5^2)}{10 - 5} = \frac{80 - 20}{5} = 12$$

PTS: 2

REF: 011521ai

TOP: Rate of Change

- 335 ANS:
hour 0 to hour 1
The graph is steepest between hour 0 and hour 1.
- PTS: 2 REF: 081601ai TOP: Rate of Change
- 336 ANS:
 $2x + 3.50 = 14.50$
- PTS: 2 REF: 081614ai TOP: Modeling Linear Equations
- 337 ANS:
III, only
- PTS: 2 REF: 061516ai TOP: Analysis of Data
- 338 ANS:
 $y > 0$
- PTS: 2 REF: 011619ai TOP: Domain and Range
KEY: real domain, exponential
- 339 ANS:
5000, the amount of money in the account initially
- PTS: 2 REF: 011515ai TOP: Modeling Exponential Functions
- 340 ANS:
 $\{0, 1, 2, 3, \dots\}$
There are no negative or fractional cars.
- PTS: 2 REF: 061402ai TOP: Domain and Range
KEY: context
- 341 ANS:
 $5x^2 + 11x - 13$
- PTS: 2 REF: 061403ai TOP: Operations with Polynomials
KEY: subtraction
- 342 ANS:
 $f(x) = (x - 5)(x + 6)$
- PTS: 2 REF: 061412ai TOP: Zeros of Polynomials
- 343 ANS:
-0.04
 $\frac{4.7 - 2.3}{20 - 80} = \frac{2.4}{-60} = -0.04.$
- PTS: 2 REF: 081414ai TOP: Rate of Change
- 344 ANS:
 $A = 1000(1 + 0.013)^2$
- PTS: 2 REF: 061712ai TOP: Modeling Exponential Functions

345 ANS:

17.06

$$119.67(0.61)^5 - 119.67(0.61)^3 \approx 17.06$$

PTS: 2

REF: 011603ai

TOP: Evaluating Functions

346 ANS:

the amount spent to manufacture each radio

PTS: 2

REF: 061407ai

TOP: Modeling Linear Functions

347 ANS:

2 and a

PTS: 2

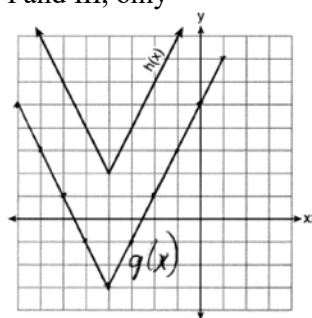
REF: 011702ai

TOP: Solving Quadratics

KEY: factoring

348 ANS:

I and III, only



PTS: 2

REF: 081718ai

TOP: Comparing Functions

349 ANS:

8

$$L + S = 20 \quad 27.98L + 10.98(20 - L) = 355.60$$

$$27.98L + 10.98S = 355.60 \quad 27.98L + 219.60 - 10.98L = 355.60$$

$$17L = 136$$

$$L = 8$$

PTS: 2

REF: 081510ai

TOP: Modeling Linear Systems

350 ANS:

 $5b$

PTS: 2

REF: 081712ai

TOP: Modeling Expressions

351 ANS:

linear

PTS: 2

REF: 081717ai

TOP: Families of Functions