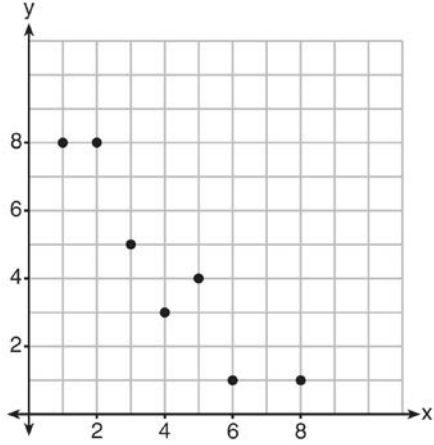


Algebra I Common Core State Standards Regents Bimodal Worksheets

1 If the area of a rectangle is expressed as $x^4 - 9y^2$, then the product of the length and the width of the rectangle could be expressed as

2 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?

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



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

5 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?

6 The expression $3(x^2 - 1) - (x^2 - 7x + 10)$ is equivalent to

7 If $A = 3x^2 + 5x - 6$ and $B = -2x^2 - 6x + 7$, then $A - B$ equals

8 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?

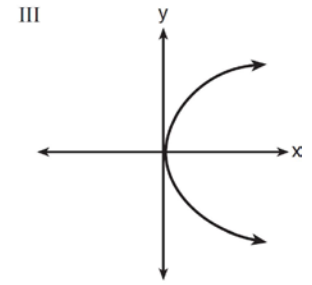
9 Which function is shown in the table below?

x	f(x)
-2	$\frac{1}{9}$
-1	$\frac{1}{3}$
0	1
1	3
2	9
3	27

13 Which representations are functions?

I

x	y
2	6
3	-12
4	7
5	5
2	-6

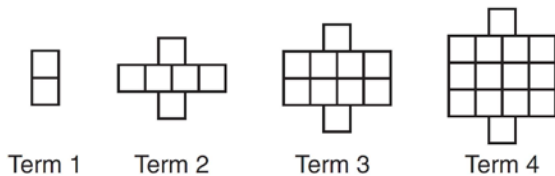


II $\{(1,1), (2,1), (3,2), (4,3), (5,5), (6,8), (7,13)\}$ IV $y = 2x + 1$

10 Which expression is equivalent to $16x^2 - 36$?

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

11 A pattern of blocks is shown below.



If the pattern of blocks continues, which formula(s) could be used to determine the number of blocks in the n th term?

I	II	III
$a_n = n + 4$	$a_1 = 2$ $a_n = a_{n-1} + 4$	$a_n = 4n - 2$

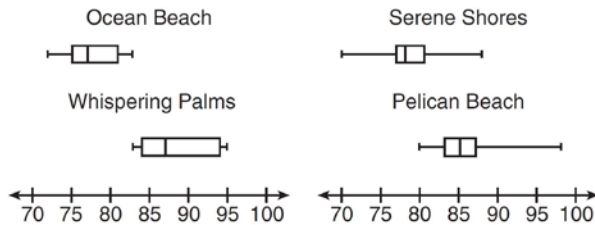
15 In 2014, the cost to mail a letter was 49¢ for up to one ounce. Every additional ounce cost 21¢. Which recursive function could be used to determine the cost of a 3-ounce letter, in cents?

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

17 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?

12 The range of the function defined as $y = 5^x$ is

- 18 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?

- 19 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?

- 20 Which recursively defined function has a first term equal to 10 and a common difference of 4?
- 21 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
- 22 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?
- 23 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?
- 24 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?
- 25 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

26 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?

27 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?

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

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

30 What are the roots of the equation $x^2 + 4x - 16 = 0$?

31 What is the solution to $2h + 8 > 3h - 6$?

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

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

34 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?

35 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?

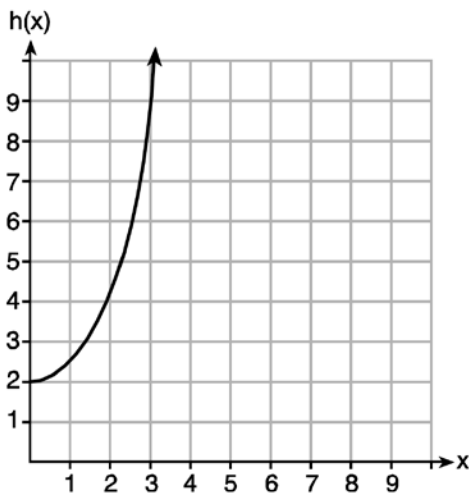
36 When $(2x - 3)^2$ is subtracted from $5x^2$, the result is

37 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 ?

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

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

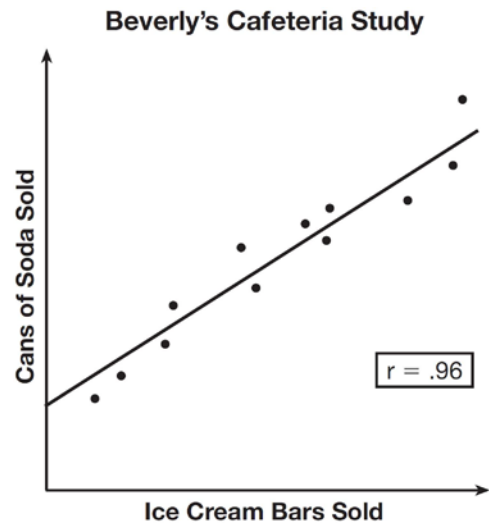
x	f(x)
0	1
1	2
2	5
3	7



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

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

40 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.

41 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

42 What is the *minimum* value of the function $y = |x + 3| - 2$?

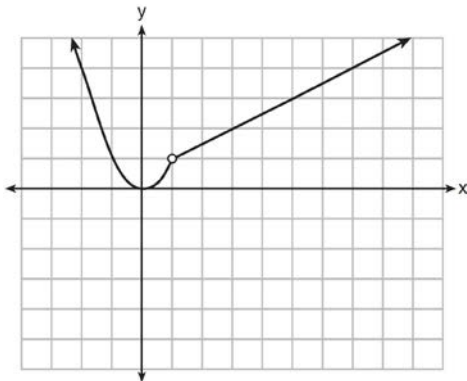
43 The zeros of the function $f(x) = 3x^2 - 3x - 6$ are

44 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?

45 A function is graphed on the set of axes below.



Which function is related to the graph?

46 Which expression is equivalent to $x^4 - 12x^2 + 36$?

47 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?

48 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?

49 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 $g(x) = 3^x$?

50 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?

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

52 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?

53 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?

- 54 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?

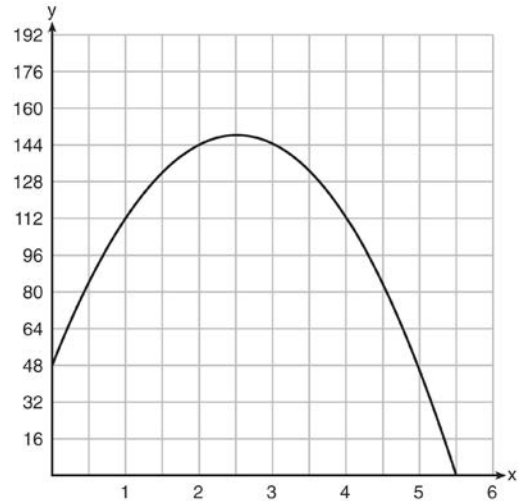
- 55 Connor wants to attend the town carnival. The price of admission to the carnival is \$4.50, and each ride costs an additional 79 cents. If he can spend at most \$16.00 at the carnival, which inequality can be used to solve for r , the number of rides Connor can go on, and what is the maximum number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

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

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

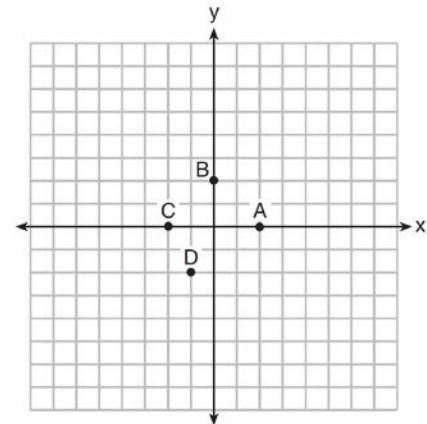
- 58 Which value of x is a solution to the equation $13 - 36x^2 = -12$?

- 59 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?

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



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

- 61 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

- 62 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?

- 63 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

- 64 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?

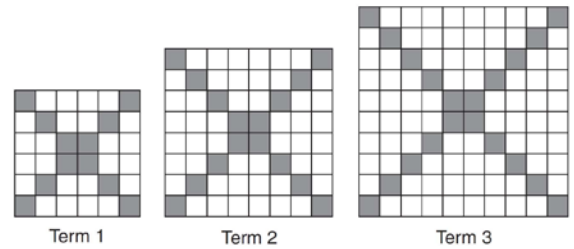
- 65 The table below shows the temperature, $T(m)$, of a cup of hot chocolate that is allowed to chill over several minutes, m .

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 $T(m)$?

- 66 For which function defined by a polynomial are the zeros of the polynomial -4 and -6 ?

- 67 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?

- 68 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

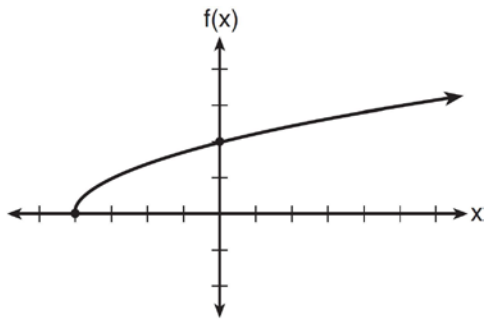
- 69 Fred is given a rectangular piece of paper. If the length of Fred's piece of paper is represented by $2x - 6$ and the width is represented by $3x - 5$, then the paper has a total area represented by

- 70 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?

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



The domain of the function is

- 72 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?

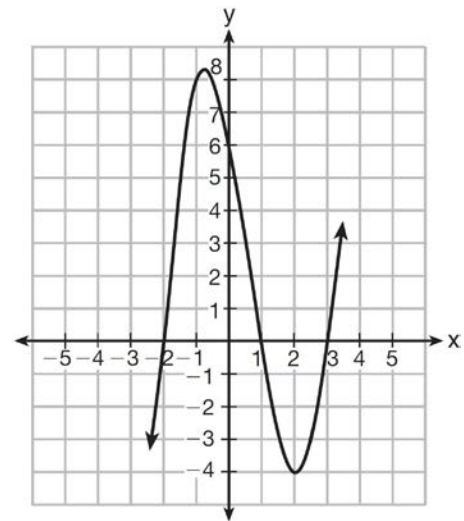
- 73 A radio station did a survey to determine what kind of music to play by taking a sample of middle school, high school, and college students. They were asked which of three different types of music they prefer on the radio: hip-hop, alternative, or classic rock. The results are summarized in the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

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

- 75 Which equation(s) represent the graph below?
 I $y = (x+2)(x^2 - 4x - 12)$
 II $y = (x-3)(x^2 + x - 2)$
 III $y = (x-1)(x^2 - 5x - 6)$



- 76 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

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

78 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?

79 Natasha is planning a school celebration and wants to have live music and food for everyone who attends. She has found a band that will charge her \$750 and a caterer who will provide snacks and drinks for \$2.25 per person. If her goal is to keep the average cost per person between \$2.75 and \$3.25, how many people, p , must attend?

80 The function $f(x) = 3x^2 + 12x + 11$ can be written in vertex form as

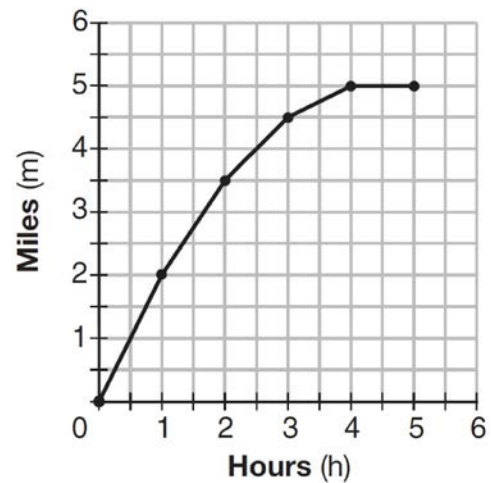
81 Andy has \$310 in his account. Each week, w , he withdraws \$30 for his expenses. Which expression could be used if he wanted to find out how much money he had left after 8 weeks?

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

83 How does the graph of $f(x) = 3(x - 2)^2 + 1$ compare to the graph of $g(x) = x^2$?

84 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?

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



Which hourly interval had the greatest rate of change?

86 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 ?

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

88 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

89 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?

90 If the quadratic formula is used to find the roots of the equation $x^2 - 6x - 19 = 0$, the correct roots are

91 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 $f(x)$?

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

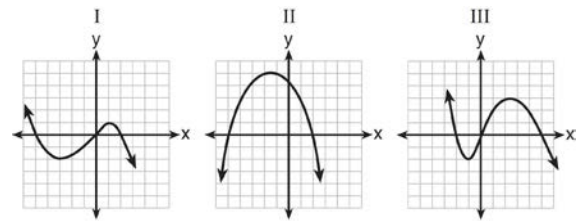
93 When factored completely, $x^3 - 13x^2 - 30x$ is

94 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

95 A polynomial function contains the factors x , $x - 2$, and $x + 5$. Which graph(s) below could represent the graph of this function?



96 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?

97 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?

98 A sunflower is 3 inches tall at week 0 and grows 2 inches each week. Which function(s) shown below can be used to determine the height, $f(n)$, of the sunflower in n weeks?

I. $f(n) = 2n + 3$

II. $f(n) = 2n + 3(n - 1)$

III. $f(n) = f(n - 1) + 2$ where $f(0) = 3$

99 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

100 If a sequence is defined recursively by $f(0) = 2$ and $f(n + 1) = -2f(n) + 3$ for $n \geq 0$, then $f(2)$ is equal to

101 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?

102 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 $c(x)$?

103 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

104 Which function defines the sequence $-6, -10, -14, -18, \dots$, where $f(6) = -26$?

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

106 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?

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

x	f(x)
1	12
2	19
3	26
4	33

x	g(x)
1	-1
2	1
3	5
4	13

x	h(x)
1	9
2	12
3	17
4	24

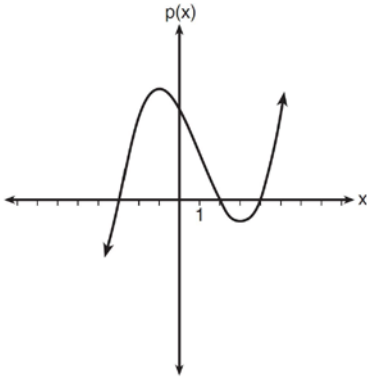
x	k(x)
1	-2
2	4
3	14
4	28

Which table represents a linear function?

108 Which recursively defined function represents the sequence $3, 7, 15, 31, \dots$?

109 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?

- 110 Based on the graph below, which expression is a possible factorization of $p(x)$?



- 111 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?

- 112 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?

- 113 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?

- 114 Keith determines the zeros of the function $f(x)$ to be -6 and 5 . What could be Keith's function?

- 115 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

- 116 Which expression is equivalent to $36x^2 - 100$?

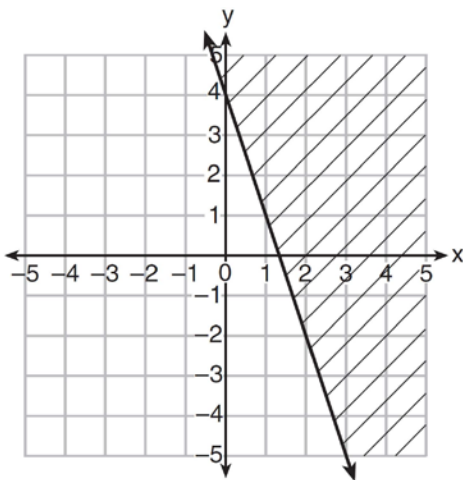
- 117 When directed to solve a quadratic equation by completing the square, Sam arrived at the equation $\left(x - \frac{5}{2}\right)^2 = \frac{13}{4}$. Which equation could have been the original equation given to Sam?

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

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

120 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?

121 Which inequality is represented in the graph below?



122 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?

123 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

124 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

125 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

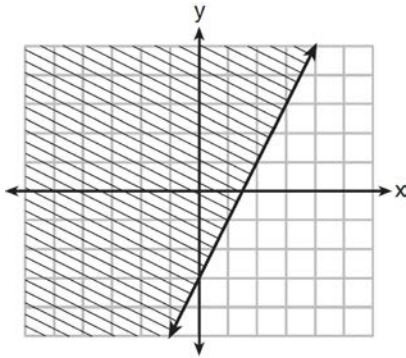
126 The range of the function $f(x) = x^2 + 2x - 8$ is all real numbers

127 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?

- 128 Which inequality is represented by the graph below?



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

- 130 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

- 131 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

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

- 133 When factored completely, the expression $p^4 - 81$ is equivalent to

- 134 What is the value of x in the equation $\frac{x-2}{3} + \frac{1}{6} = \frac{5}{6}$?

- 135 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?

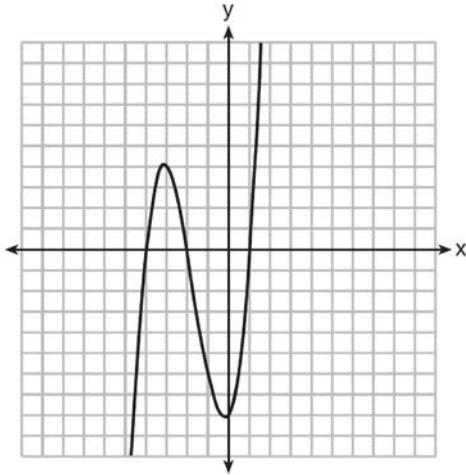
- 136 In 2013, the United States Postal Service charged \$0.46 to mail a letter weighing up to 1 oz. and \$0.20 per ounce for each additional ounce. Which function would determine the cost, in dollars, $c(z)$, of mailing a letter weighing z ounces where z is an integer greater than 1?

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

- 138 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?

139 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?

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



Which function could represent the graph of $f(x)$?

141 If $f(1) = 3$ and $f(n) = -2f(n-1) + 1$, then $f(5) =$

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

143 What are the solutions to the equation
 $x^2 - 8x = 24$?

Algebra I Common Core State Standards Regents Bimodal Worksheets Answer Section

1 ANS:

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

PTS: 2

REF: 061503ai

TOP: Factoring the Difference of Perfect Squares

KEY: higher power

2 ANS:

$$c = 60 + 0.05d$$

PTS: 2

REF: 061422ai

TOP: Modeling Linear Equations

3 ANS:

$$-0.93$$

PTS: 2

REF: 061411ai

TOP: Correlation Coefficient

4 ANS:

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

PTS: 2

REF: 081523ai

TOP: Solving Quadratics

KEY: taking square roots

5 ANS:

60

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

PTS: 2

REF: 061615ai

TOP: Frequency Tables

6 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

7 ANS:

$$5x^2 + 11x - 13$$

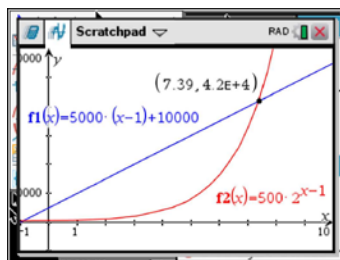
PTS: 2

REF: 061403ai

TOP: Operations with Polynomials

KEY: subtraction

8 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

9 ANS:

$$f(x) = 3^x$$

PTS: 2 REF: 011616ai TOP: Families of Functions

10 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

11 ANS:

II and III

PTS: 2 REF: 061522ai TOP: Sequences

12 ANS:

$$y > 0$$

PTS: 2 REF: 011619ai TOP: Domain and Range

KEY: real domain, exponential

13 ANS:

II and IV

PTS: 2 REF: 081511ai TOP: Defining Functions

KEY: mixed

14 ANS:

-2

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

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

$$x + 6 = 2x \quad -6 = 3x$$

$$x + 6 = 2x \quad -2 = x$$

$$6 = x$$

PTS: 2 REF: 011617ai TOP: Other Systems

KEY: AI

15 ANS:

$$a_1 = 49; a_n = a_{n-1} + 21$$

PTS: 2 REF: 011708ai TOP: Sequences

16 ANS:

2 and a

PTS: 2 REF: 011702ai TOP: Solving Quadratics

17 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

KEY: AI

18 ANS:

Pelican Beach

PTS: 2 REF: 011514ai TOP: Central Tendency and Dispersion

19 ANS:

-0.04

$$\frac{4.7 - 2.3}{20 - 80} = \frac{2.4}{-60} = -0.04.$$

PTS: 2 REF: 081414ai TOP: Rate of Change

KEY: AI

20 ANS:

$$f(1) = 10$$

$$f(x) = f(x - 1) + 4$$

PTS: 2 REF: 081514ai TOP: Sequences

21 ANS:

1.7%

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

- 22 ANS:
 $\{0, 1, 2, 3, \dots\}$
 There are no negative or fractional cars.
 PTS: 2 REF: 061402ai TOP: Domain and Range
- 23 ANS:
 5000, the amount of money in the account initially
 PTS: 2 REF: 011515ai TOP: Modeling Exponential Functions
- 24 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
- 25 ANS:
 positive integers
 PTS: 2 REF: 011615ai TOP: Domain and Range
- 26 ANS:
 $j^2 + 2j = 783$
 PTS: 2 REF: 081409ai TOP: Modeling Quadratics
- 27 ANS:
 $y = 14.1x + 5.8$
 PTS: 2 REF: 081421ai TOP: Regression KEY: linear
- 28 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
 KEY: AI
- 29 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

30 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

31 ANS:

$$h < 14$$

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

$$14 > h$$

$$h < 14$$

PTS: 2

REF: 081607ai

TOP: Solving Linear Inequalities

32 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

33 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

34 ANS:

exponential growth function

PTS: 2

REF: 061406ai

TOP: Families of Functions

35 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

36 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

37 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

38 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

KEY: AI

39 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

KEY: AI

40 ANS:
III, only

PTS: 2 REF: 061516ai TOP: Analysis of Data

41 ANS:

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

PTS: 2 REF: 011606ai TOP: Transforming Formulas

42 ANS:
-2

PTS: 2 REF: 011712ai TOP: Graphing Absolute Value Functions

43 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: Solving Quadratics

44 ANS:

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

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

45 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

46 ANS:

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

PTS: 2 REF: 081415ai TOP: Factoring Polynomials

KEY: higher power

47 ANS:

20° Celsius

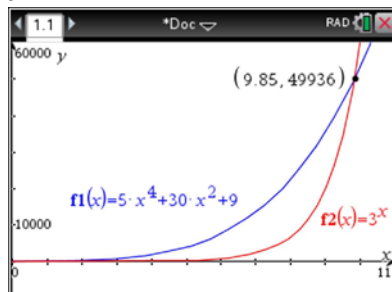
$$C(68) = \frac{5}{9}(68 - 32) = 20$$

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

48 ANS:
 $3.00a + 1.50s$

PTS: 2 REF: 081503ai TOP: Modeling Expressions

49 ANS:
 9



PTS: 2 REF: 061621ai TOP: Families of Functions

50 ANS:
 65

$$\begin{aligned}
 a + p &= 165 & 1.75(165 - p) + 2.5p &= 337.5 \\
 1.75a + 2.5p &= 337.5 & 288.75 - 1.75p + 2.5p &= 337.5 \\
 & & 0.75p &= 48.75 \\
 & & p &= 65
 \end{aligned}$$

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

51 ANS:

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

PTS: 2 REF: 081512ai TOP: Functional Notation

52 ANS:
 $a_n = 8n - 14$

PTS: 2 REF: 081416ai TOP: Sequences

53 ANS:
 whole numbers greater than or equal to one

PTS: 2 REF: 081620ai TOP: Domain and Range

54 ANS:
 $2x + 3.50 = 14.50$

PTS: 2 REF: 081614ai TOP: Modeling Linear Equations

55 ANS:
 $4.50 + 0.79r \leq 16.00$; 14 rides

PTS: 2 REF: 011513ai TOP: Modeling Linear Inequalities

56 ANS:
 -5 and 5

PTS: 2 REF: 081403ai TOP: Solving Quadratics
 KEY: taking square roots

57 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
 KEY: AI

58 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

59 ANS:
 $2.5 < x < 5.5$

PTS: 2 REF: 061409ai TOP: Graphing Quadratic Functions

60 ANS:
 A

PTS: 2 REF: 061420ai TOP: Functional Notation

61 ANS:
 $F(x) = 2^x + 1$

PTS: 2 REF: 061415ai TOP: Families of Functions

62 ANS:
 2% growth

PTS: 2 REF: 011608ai TOP: Modeling Exponential Functions

63 ANS:
up

PTS: 2 REF: 081501ai TOP: Graphing Linear Functions

64 ANS:
whole numbers

PTS: 2 REF: 011506ai TOP: Domain and Range

65 ANS:
 $150(0.85)^m$

PTS: 2 REF: 081617ai TOP: Modeling Exponential Functions
KEY: AI

66 ANS:
 $y = x^2 + 10x + 24$
 $(x + 4)(x + 6) = 0$
 $x^2 + 10x + 24 = 0$

PTS: 2 REF: spr1303ai TOP: Zeros of Polynomials
KEY: AI

67 ANS:
 $a_n = 4n + 8$

PTS: 2 REF: 061424ai TOP: Sequences

68 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

69 ANS:
 $6x^2 - 28x + 30$

PTS: 2 REF: 011510ai TOP: Operations with Polynomials
KEY: multiplication

- 70 ANS:
II, only
- PTS: 2 REF: 011604ai TOP: Classifying Numbers
- 71 ANS:
 $\{x|x \geq -4\}$
- PTS: 2 REF: 061509ai TOP: Domain and Range
KEY: graph
- 72 ANS:
 $0.75(7) + 1.25b \leq 22$
- PTS: 2 REF: 081505ai TOP: Modeling Linear Inequalities
- 73 ANS:
28%
- $$\frac{14}{16 + 20 + 14} = 28\%$$
- PTS: 2 REF: 011705ai TOP: Frequency Tables
- 74 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
- 75 ANS:
II, only
 $y = (x - 3)(x + 2)(x - 1)$
- PTS: 2 REF: 061512ai TOP: Zeros of Polynomials
KEY: AI
- 76 ANS:
I, II, and IV
- PTS: 2 REF: 081509ai TOP: Factoring Polynomials
KEY: quadratic
- 77 ANS:
16
 $a_n = 3n + 1$
 $a_5 = 3(5) + 1 = 16$
- PTS: 2 REF: 061613ai TOP: Sequences KEY: term

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

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

79 ANS:
 $750 < p < 1500$
 $\frac{750 + 2.25p}{p} > 2.75 \quad \frac{750 + 2.25p}{p} < 3.25$
 $750 + 2.25p > 2.75p \quad 750 + 2.25p < 3.25p$
 $750 > .50p \quad 750 < p$
 $1500 > p$

PTS: 2 REF: 061524ai TOP: Modeling Linear Inequalities

80 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

81 ANS:
 $280 - 30(w - 1)$

PTS: 2 REF: 011718ai TOP: Modeling Expressions

82 ANS:
 2

PTS: 2 REF: 011601ai TOP: Vertex Form of a Quadratic

83 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

84 ANS:
 $a + c = 150$
 $10.25a + 7.75c = 1470$

PTS: 2 REF: 061605ai TOP: Modeling Linear Systems

85 ANS:
 hour 0 to hour 1
 The graph is steepest between hour 0 and hour 1.

PTS: 2 REF: 081601ai TOP: Rate of Change
 KEY: AI

86 ANS:

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

PTS: 2

REF: 011611ai

TOP: Geometric Applications of Quadratics

87 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

88 ANS:

the amount spent to manufacture each radio

PTS: 2

REF: 061407ai

TOP: Modeling Linear Functions

89 ANS:

I, only

PTS: 2

REF: 011623ai

TOP: Families of Functions

90 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

91 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

92 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

- 93 ANS:
 $x(x+2)(x-15)$
- PTS: 2 REF: 011612ai TOP: Factoring Polynomials
 KEY: higher power
- 94 ANS:
 $3x - 1 = \pm 5$
- PTS: 2 REF: 061521ai TOP: Solving Quadratics
 KEY: taking square roots
- 95 ANS:
 I, only
- PTS: 2 REF: 011524ai TOP: Zeros of Polynomials
 KEY: AI
- 96 ANS:
 $f(t) = (9.05 \times 10^6)(1 + 0.031)^7$
- PTS: 2 REF: 081507ai TOP: Modeling Exponential Functions
 KEY: AI
- 97 ANS:
 $f(t) = 25^{t+1}$
- PTS: 2 REF: 061513ai TOP: Families of Functions
- 98 ANS:
 I and III
- PTS: 2 REF: 061421ai TOP: Sequences
- 99 ANS:
 $r = \sqrt{\frac{V}{\pi h}}$
- PTS: 2 REF: 011516ai TOP: Transforming Formulas
- 100 ANS:
 5
 $f(0+1) = -2f(0) + 3 = -2(2) + 3 = -1$
 $f(1+1) = -2f(1) + 3 = -2(-1) + 3 = 5$
- PTS: 2 REF: 011520ai TOP: Sequences KEY: term
- 101 ANS:
 addition property of equality
- PTS: 2 REF: 061401ai TOP: Identifying Properties
- 102 ANS:
 whole numbers
- PTS: 2 REF: 011719ai TOP: Domain and Range

- 103 ANS:
speed of the car
- PTS: 2 REF: 011709ai TOP: Modeling Linear Functions
- 104 ANS:
 $f(x) = -4x - 2$
- PTS: 2 REF: 081610ai TOP: Sequences
- 105 ANS:
 $-2g - 11$
 $2(3g - 4) - (8g + 3) = 6g - 8 - 8g - 3 = -2g - 11$
- PTS: 2 REF: 011707ai TOP: Operations with Polynomials
KEY: subtraction
- 106 ANS:
2589
 $25,000(0.86)^2 - 25,000(0.86)^3 = 18490 - 15901.40 = 2588.60$
- PTS: 2 REF: 011508ai TOP: Functional Notation
- 107 ANS:
 $f(x)$
- PTS: 2 REF: 061606ai TOP: Families of Functions
- 108 ANS:
 $f(1) = 3, f(n + 1) = 2f(n) + 1$
- PTS: 2 REF: 011618ai TOP: Sequences
- 109 ANS:
 $0.05(x + 4) + 0.10(x) = \1.25
- PTS: 2 REF: 061416ai TOP: Modeling Linear Equations
- 110 ANS:
 $(x + 3)(x - 2)(x - 4)$
- PTS: 2 REF: 081623ai TOP: Zeros of Polynomials
KEY: AI
- 111 ANS:
It decreases 22% per year.
- PTS: 2 REF: 081624ai TOP: Modeling Exponential Functions
- 112 ANS:
 $12x - 24 = 60$
- PTS: 2 REF: 081616ai TOP: Modeling Linear Equations

113 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

KEY: AI

114 ANS:

$$f(x) = (x - 5)(x + 6)$$

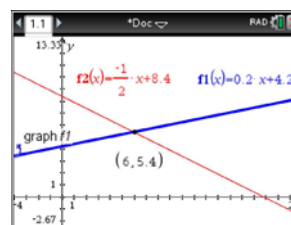
PTS: 2

REF: 061412ai

TOP: Solving Quadratics

115 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

116 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

117 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

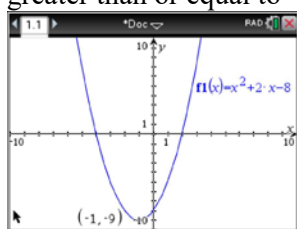
REF: 061518ai

TOP: Solving Quadratics

KEY: completing the square

- 118 ANS:
 10
 $4x - 5(0) = 40$
 $4x = 40$
 $x = 10$
- PTS: 2 REF: 081408ai TOP: Graphing Linear Functions
- 119 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
- 120 ANS:
 $m + f = 3.95$
 $f + 0.005 = m$
- PTS: 2 REF: 081419ai TOP: Modeling Linear Systems
- 121 ANS:
 $y \geq -3x + 4$
- PTS: 2 REF: 061505ai TOP: Graphing Linear Inequalities
- 122 ANS:
 $3000(1 + 0.02)^{16}$
- PTS: 2 REF: 011504ai TOP: Modeling Exponential Functions
 KEY: AI
- 123 ANS:
 nonnegative rational numbers
- PTS: 2 REF: 061623ai TOP: Domain and Range
- 124 ANS:
 $0 \leq y \leq 8$
 $f(2) = 0$
 $f(6) = 8$
- PTS: 2 REF: 081411ai TOP: Domain and Range
 KEY: limited domain
- 125 ANS:
 hours worked per week
- PTS: 2 REF: 011501ai TOP: Modeling Linear Functions

- 126 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

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

PTS: 2 REF: 061511ai TOP: Rate of Change
KEY: AI

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

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

- 129 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
KEY: AI

- 130 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

131 ANS:

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

PTS: 2

REF: 011704ai

TOP: Transforming Formulas

132 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: Solving Quadratics

133 ANS:

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

PTS: 2

REF: 011522ai

TOP: Factoring the Difference of Perfect Squares

KEY: higher power

134 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

135 ANS:

17.06

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

PTS: 2

REF: 011603ai

TOP: Evaluating Functions

136 ANS:

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

PTS: 2

REF: 011523ai

TOP: Modeling Linear Functions

137 ANS:

$$x \geq 11$$

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

$$22 \leq 2x$$

$$11 \leq x$$

PTS: 2

REF: 061609ai

TOP: Solving Linear Inequalities

138 ANS:

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

PTS: 2

REF: spr1304ai

TOP: Geometric Applications of Quadratics

139 ANS:

quadratic

PTS: 2

REF: 061624ai

TOP: Families of Functions

140 ANS:

$$f(x) = (x + 2)(x^2 + 3x - 4)$$

$$f(x) = (x + 2)(x + 4)(x - 1)$$

PTS: 2

REF: 081504ai

TOP: Zeros of Polynomials

KEY: AI

141 ANS:

43

$$f(1) = 3; f(2) = -5; f(3) = 11; f(4) = -21; f(5) = 43$$

PTS: 2

REF: 081424ai

TOP: Sequences

KEY: term

142 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

143 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