JMAP
REGENTS BY COMMON CORE STATE STANDARD: TOPIC

NY Algebra 1 Regents Exam Questions
from Fall 2013 to January 2015 Sorted by CCSS: Topic

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Algebra 1 Regents Exam Questions by Common Core State Standard: Topic

NUMBERS, OPERATIONS AND PROPERTIES
A.RN.3: CLASSIFYING NUMBERS

1 Given: $L = \sqrt{2}$

$M = 3\sqrt{3}$

$N = \sqrt{16}$

$P = \sqrt{9}$

Which expression results in a rational number?
1    $L + M$
2    $M + N$
3    $N + P$
4    $P + L$

2 Which statement is *not* always true?
1   The product of two irrational numbers is irrational.
2   The product of two rational numbers is rational.
3   The sum of two rational numbers is rational.
4   The sum of a rational number and an irrational number is irrational.

3 Ms. Fox asked her class "Is the sum of 4.2 and $\sqrt{2}$ rational or irrational?" Patrick answered that the sum would be irrational. State whether Patrick is correct or incorrect. Justify your reasoning.

A.REI.1: IDENTIFYING PROPERTIES

4 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?
1   addition property of equality
2   commutative property of addition
3   multiplication property of equality
4   distributive property of multiplication over addition

GRAPHS AND STATISTICS
S.ID.5: FREQUENCY HISTOGRAMS AND TABLES

5 The school newspaper surveyed the student body for an article about club membership. The table below shows the number of students in each grade level who belong to one or more clubs.

	1 Club	2 Clubs	3 or More Clubs
9th	90	33	12
10th	125	12	15
11th	87	22	18
12th	75	27	23

If there are 180 students in ninth grade, what percentage of the ninth grade students belong to more than one club?

S.ID.1: BOX PLOTS

6 Robin collected data on the number of hours she watched television on Sunday through Thursday nights for a period of 3 weeks. The data are shown in the table below.

	Sun	Mon	Tues	Wed	Thurs
Week 1	4	3	3.5	2	2
Week 2	4.5	5	2.5	3	1.5
Week 3	4	3	1	1.5	2.5

Using an appropriate scale on the number line below, construct a box plot for the 15 values.

S.ID.2: CENTRAL TENDENCY AND DISPERSION

7   Isaiah collects data from two different companies, each with four employees. The results of the study, based on each worker's age and salary, are listed in the tables below.

Company 1

Worker's Age in Years	Salary in Dollars
25	30,000
27	32,000
28	35,000
33	38,000

Company 2

Worker's Age in Years	Salary in Dollars
25	29,000
28	35,500
29	37,000
31	65,000

Which statement is true about these data?
1   The median salaries in both companies are greater than $37,000.
2   The mean salary in company 1 is greater than the mean salary in company 2.
3   The salary range in company 2 is greater than the salary range in company 1.
4   The mean age of workers at company 1 is greater than the mean age of workers at company 2.

8   Christopher looked at his quiz scores shown below for the first and second semester of his Algebra class.
Semester 1: 78, 91, 88, 83, 94
Semester 2: 91, 96, 80, 77, 88, 85, 92
Which statement about Christopher's performance is correct?
1   The interquartile range for semester 1 is greater than the interquartile range for semester 2.
2   The median score for semester 1 is greater than the median score for semester 2.
3   The mean score for semester 2 is greater than the mean score for semester 1.
4   The third quartile for semester 2 is greater than the third quartile for semester 1.

9   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.
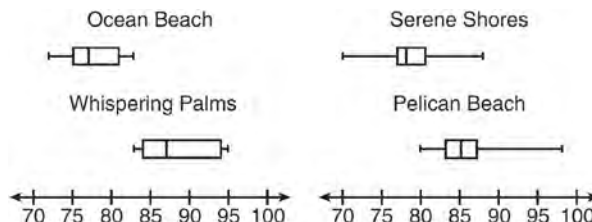
Which destination has a median temperature above 80 degrees and the smallest interquartile range?
1   Ocean Beach
2   Whispering Palms
3   Serene Shores
4   Pelican Beach

S.ID.6a: REGRESSION

10   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?
1    $y = 15x$
2    $y = 0.07x$
3    $y = 0.1x - 0.4$
4    $y = 14.1x + 5.8$

11   Emma recently purchased a new car. She decided to keep track of how many gallons of gas she used on five of her business trips. The results are shown in the table below.

Miles Driven	Number of Gallons Used
150	7
200	10
400	19
600	29
1000	51

Write the linear regression equation for these data where miles driven is the independent variable. (Round all values to the *nearest hundredth*.)

12   About a year ago, Joey watched an online video of a band and noticed that it had been viewed only 843 times. One month later, Joey noticed that the band's video had 1708 views. Joey made the table below to keep track of the cumulative number of views the video was getting online.

Months Since First Viewing	Total Views
0	843
1	1708
2	forgot to record
3	7124
4	14,684
5	29,787
6	62,381

Write a regression equation that best models these data. Round all values to the *nearest hundredth*. Justify your choice of regression equation. As shown in the table, Joey forgot to record the number of views after the second month. Use the equation from part *a* to estimate the number of full views of the online video that Joey forgot to record.

S.ID.8: CORRELATION COEFFICIENT AND RESIDUALS

13   What is the correlation coefficient of the linear fit of the data shown below, to the *nearest hundredth*?
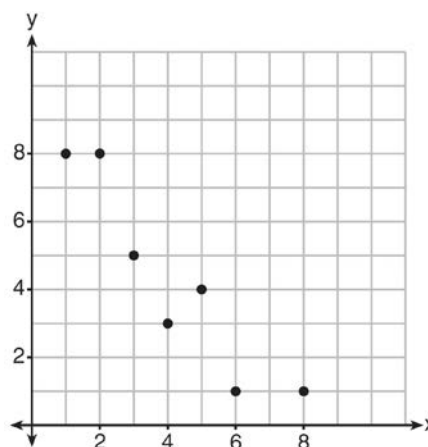
1   1.00
2   0.93
3   −0.93
4   −1.00

14 A nutritionist collected information about different brands of beef hot dogs. She made a table showing the number of Calories and the amount of sodium in each hot dog.

Calories per Beef Hot Dog	Milligrams of Sodium per Beef Hot Dog
186	495
181	477
176	425
149	322
184	482
190	587
158	370
139	322

a) Write the correlation coefficient for the line of best fit. Round your answer to the *nearest hundredth*.
b) Explain what the correlation coefficient suggests in the context of this problem.

S.ID.6b: CORRELATION COEFFICIENT AND RESIDUALS

15 Use the data below to write the regression equation ($y = ax + b$) for the raw test score based on the hours tutored. Round all values to the *nearest hundredth*.

Tutor Hours, x	Raw Test Score	Residual (Actual – Predicted)
1	30	1.3
2	37	1.9
3	35	−6.4
4	47	−0.7
5	56	2.0
6	67	6.6
7	62	−4.7

Equation: _____

Create a residual plot on the axes below, using the residual scores in the table above.
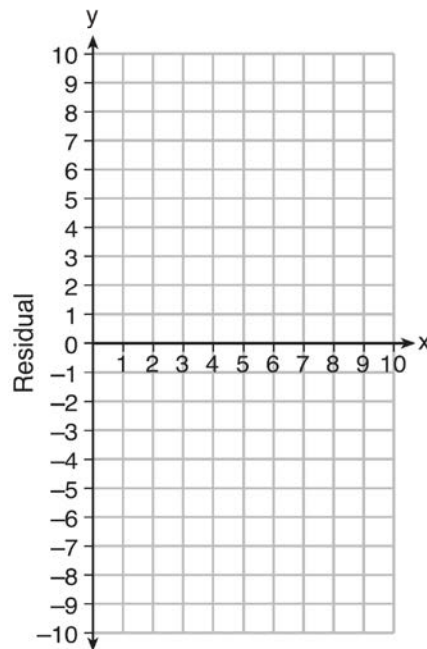
Based on the residual plot, state whether the equation is a good fit for the data. Justify your answer.

16 The table below represents the residuals for a line of best fit.

x	2	3	3	4	6	7	8	9	9	10
Residual	2	1	−1	−2	−3	−2	−1	2	0	3

Plot these residuals on the set of axes below.
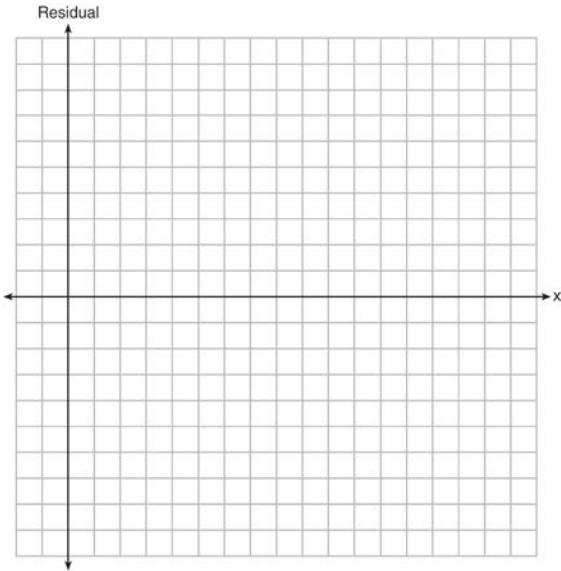
Residual

Using the plot, assess the fit of the line for these residuals and justify your answer.

S.ID.6c: CORRELATION COEFFICIENT AND RESIDUALS

17 Which statistic would indicate that a linear function would *not* be a good fit to model a data set?

1   $r = -0.93$

2   $r = 1$

    Residual

3

    Residual

4

RATE
F.IF.6: RATE OF CHANGE

18 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?
1   2.4
2   0.04
3   −2.4
4   −0.04

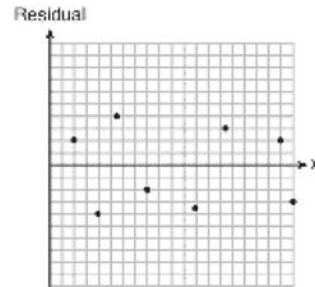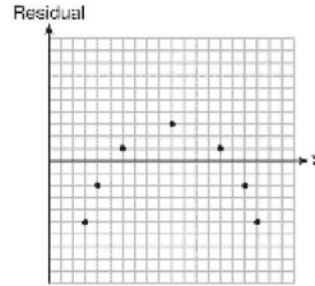19 An astronaut drops a rock off the edge of a cliff on the Moon. The distance, $d(t)$, in meters, the rock travels after t seconds can be modeled by the function $d(t) = 0.8t^2$. What is the average speed, in meters per second, of the rock between 5 and 10 seconds after it was dropped?
1   12
2   20
3   60
4   80

20 The Jamison family kept a log of the distance they traveled during a trip, as represented by the graph below.
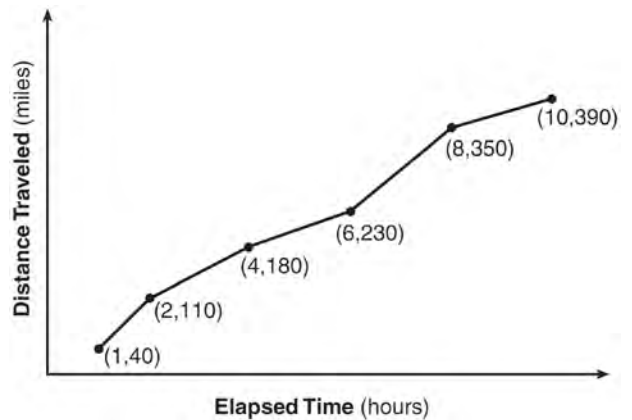
During which interval was their average speed the greatest?
1   the first hour to the second hour
2   the second hour to the fourth hour
3   the sixth hour to the eighth hour
4   the eighth hour to the tenth hour

6

21 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

h(x)

The correct list of functions ordered from greatest to least by average rate of change over the interval $0 \le x \le 3$ is
1   f(x), g(x), h(x)
2   h(x), g(x), f(x)
3   g(x), f(x), h(x)
4   h(x), f(x), g(x)

N.Q.1: CONVERSIONS

22 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.

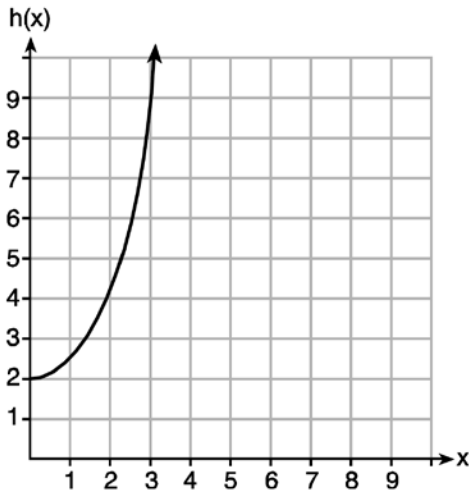$$\frac{40 \text{ yd}}{4.5 \text{ sec}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$$

Which ratio is *incorrectly* written to convert his speed?

1    $\dfrac{3 \text{ ft}}{1 \text{ yd}}$

2    $\dfrac{5280 \text{ ft}}{1 \text{ mi}}$

3    $\dfrac{60 \text{ sec}}{1 \text{ min}}$

4    $\dfrac{60 \text{ min}}{1 \text{ hr}}$

LINEAR EQUATIONS
A.REI.3: SOLVING LINEAR EQUATIONS

23 What is the value of x in the equation
$$\frac{x-2}{3} + \frac{1}{6} = \frac{5}{6}?$$
1   4
2   6
3   8
4   11

24 Which value of x satisfies the equation
$$\frac{7}{3}\left(x + \frac{9}{28}\right) = 20?$$
1   8.25
2   8.89
3   19.25
4   44.92

A.SSE.1a: MODELING LINEAR EQUATIONS

25 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
1 computers repaired per week
2 hours worked per week
3 customers served per week
4 days worked per week

F.LE.5: MODELING LINEAR EQUATIONS

26 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?
1 y is the total cost, x is the number of months of service, $90 is the installation fee, and $40 is the service charge per month.
2 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.
3 x is the total cost, y is the number of months of service, $40 is the installation fee, and $90 is the service charge per month.
4 x is the total cost, y is the number of months of service, $90 is the installation fee, and $40 is the service charge per month.

27 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
1 the start-up cost
2 the profit earned from the sale of one radio
3 the amount spent to manufacture each radio
4 the average number of radios manufactured

F.BF.1a: MODELING LINEAR EQUATIONS

28 Caitlin has a movie rental card worth $175. After she rents the first movie, the card's value is $172.25. After she rents the second movie, its value is $169.50. After she rents the third movie, the card is worth $166.75. Assuming the pattern continues, write an equation to define $A(n)$, the amount of money on the rental card after n rentals. Caitlin rents a movie every Friday night. How many weeks in a row can she afford to rent a movie, using her rental card only? Explain how you arrived at your answer.

A.CED.1: MODELING LINEAR EQUATIONS

29 Donna wants to make trail mix made up of almonds, walnuts and raisins. She wants to mix one part almonds, two parts walnuts, and three parts raisins. Almonds cost $12 per pound, walnuts cost $9 per pound, and raisins cost $5 per pound. Donna has $15 to spend on the trail mix. Determine how many pounds of trail mix she can make. [Only an algebraic solution can receive full credit.]

30 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?
1 $c = 60 - 0.05d$
2 $c = 60.05d$
3 $c = 60d - 0.05$
4 $c = 60 + 0.05d$

31 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?
1 $0.10(x + 4) + 0.05(x) = \$1.25$
2 $0.05(x + 4) + 0.10(x) = \$1.25$
3 $0.10(4x) + 0.05(x) = \$1.25$
4 $0.05(4x) + 0.10(x) = \$1.25$

32 A gardener is planting two types of trees:

> Type A is three feet tall and grows at a rate of 15 inches per year.
> Type B is four feet tall and grows at a rate of 10 inches per year.

Algebraically determine exactly how many years it will take for these trees to be the same height.

A.CED.2: MODELING LINEAR EQUATIONS

33 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?

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

2   $c(z) = 0.20z + 0.46$

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

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

34 An animal shelter spends $2.35 per day to care for each cat and $5.50 per day to care for each dog. Pat noticed that the shelter spent $89.50 caring for cats and dogs on Wednesday. Write an equation to represent the possible numbers of cats and dogs that could have been at the shelter on Wednesday. Pat said that there might have been 8 cats and 14 dogs at the shelter on Wednesday. Are Pat's numbers possible? Use your equation to justify your answer. Later, Pat found a record showing that there were a total of 22 cats and dogs at the shelter on Wednesday. How many cats were at the shelter on Wednesday?

A.CED.2: GRAPHING LINEAR EQUATIONS

35 Max purchased a box of green tea mints. The nutrition label on the box stated that a serving of three mints contains a total of 10 Calories. On the axes below, graph the function, C, where $C(x)$ represents the number of Calories in x mints.
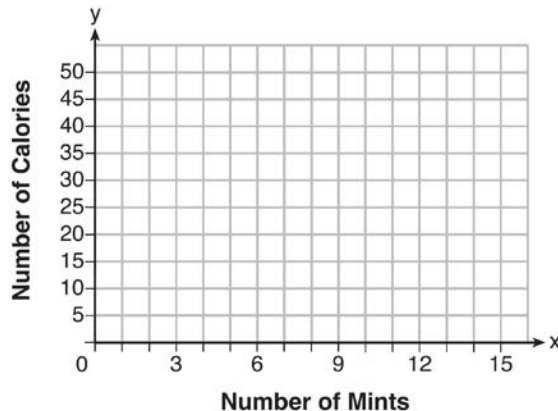
Write an equation that represents $C(x)$. A full box of mints contains 180 Calories. Use the equation to determine the total number of mints in the box.

36 Which graph shows a line where each value of y is three more than half of x?

1

2

3

4
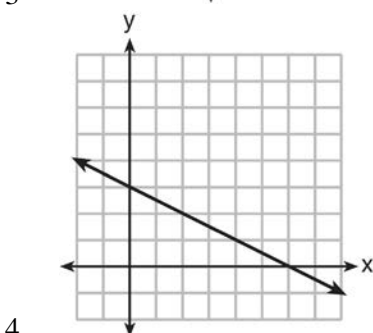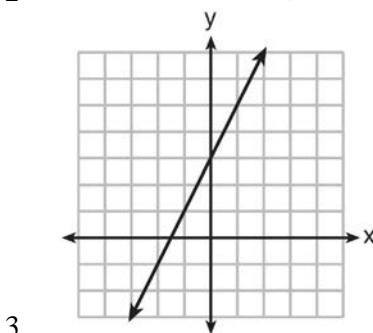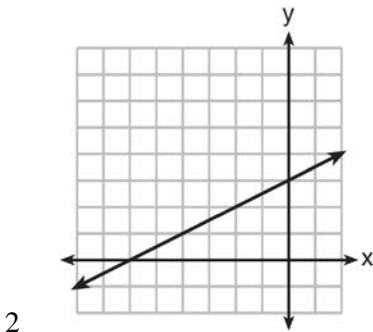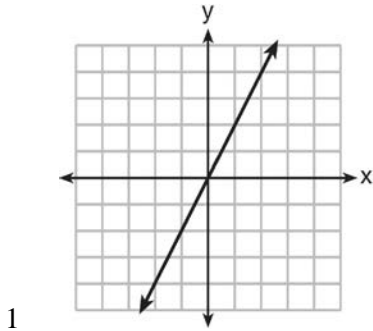
A.REI.10: GRAPHING LINEAR FUNCTIONS

37 The graph of a linear equation contains the points $(3, 11)$ and $(-2, 1)$. Which point also lies on the graph?
1   $(2, 1)$
2   $(2, 4)$
3   $(2, 6)$
4   $(2, 9)$

38 On the set of axes below, draw the graph of the equation $y = -\frac{3}{4}x + 3$.

Is the point $(3, 2)$ a solution to the equation?
Explain your answer based on the graph drawn.

F.IF.4: GRAPHING LINEAR FUNCTIONS

39 Which function has the same y-intercept as the graph below?

1 $y = \dfrac{12 - 6x}{4}$

2 $27 + 3y = 6x$

3 $6y + x = 18$

4 $y + 3 = 6x$

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

1 10

2 $\dfrac{4}{5}$

3 $-\dfrac{4}{5}$

4 -8

A.CED.4: TRANSFORMING FORMULAS
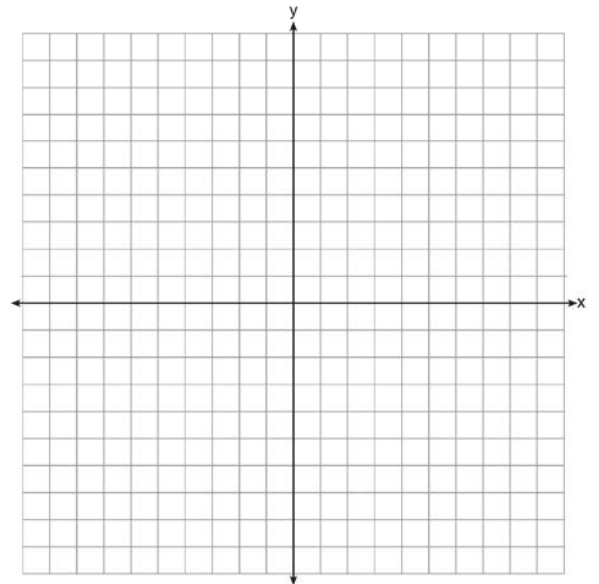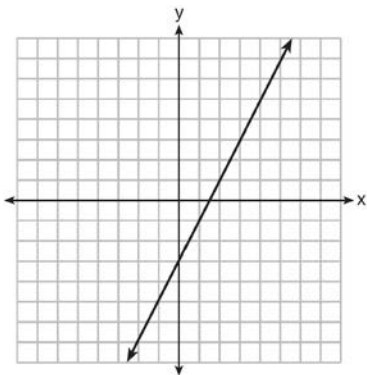
41 The formula for the volume of a cone is $V = \dfrac{1}{3}\pi r^2 h$. The radius, r, of the cone may be expressed as

1 $\sqrt{\dfrac{3V}{\pi h}}$

2 $\sqrt{\dfrac{V}{3\pi h}}$

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

4 $\dfrac{1}{3}\sqrt{\dfrac{V}{\pi h}}$

42 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

1 $r = \sqrt{\dfrac{V}{\pi h}}$

2 $r = \sqrt{V\pi h}$

3 $r = 2V\pi h$

4 $r = \dfrac{V}{2\pi}$

43 The formula for the area of a trapezoid is $A = \dfrac{1}{2} h(b_1 + b_2)$. Express b_1 in terms of A, h, and b_2. The area of a trapezoid is 60 square feet, its height is 6 ft, and one base is 12 ft. Find the number of feet in the other base.

LINEAR INEQUALITIES
A.REI.3: SOLVING LINEAR INEQUALITIES

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

1 $x > 9$

2 $x > -\dfrac{3}{5}$

3 $x < 9$

4 $x < -\dfrac{3}{5}$

45 Solve the inequality below to determine and state the smallest possible value for x in the solution set.
$$3(x + 3) \le 5x - 3$$

46 Given $2x + ax - 7 > -12$, determine the largest integer value of a when $x = -1$.

A.CED.1: MODELING LINEAR INEQUALITIES

47 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?

1 $0.79 + 4.50r \le 16.00$; 3 rides
2 $0.79 + 4.50r \le 16.00$; 4 rides
3 $4.50 + 0.79r \le 16.00$; 14 rides
4 $4.50 + 0.79r \le 16.00$; 15 rides

A.CED.3: MODELING LINEAR INEQUALITIES

48 David has two jobs. He earns $8 per hour babysitting his neighbor's children and he earns $11 per hour working at the coffee shop. Write an inequality to represent the number of hours, x, babysitting and the number of hours, y, working at the coffee shop that David will need to work to earn a minimum of $200. David worked 15 hours at the coffee shop. Use the inequality to find the number of full hours he must babysit to reach his goal of $200.

ABSOLUTE VALUE
F.IF.7b: GRAPHING ABSOLUTE VALUE FUNCTIONS

49 On the set of axes below, graph the function $y = |x + 1|$.
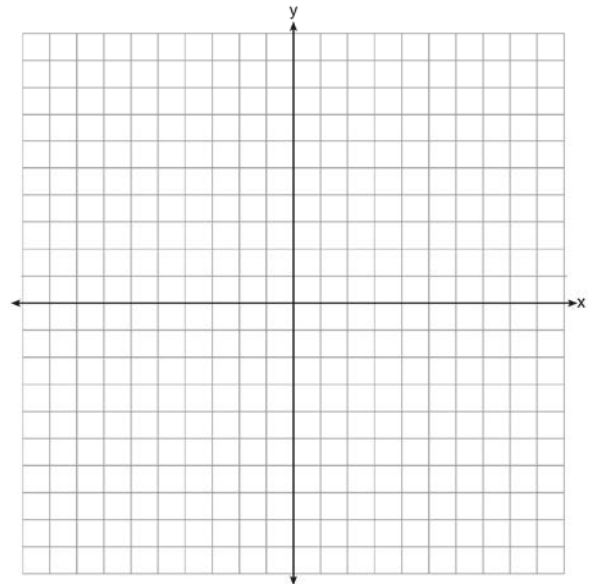
State the range of the function. State the domain over which the function is increasing.

QUADRATICS
A.SSE.3a: SOLVING QUADRATICS

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

1 $f(x) = (x + 5)(x + 6)$
2 $f(x) = (x + 5)(x - 6)$
3 $f(x) = (x - 5)(x + 6)$
4 $f(x) = (x - 5)(x - 6)$

51 Which equation has the same solutions as $2x^2 + x - 3 = 0$

1 $(2x - 1)(x + 3) = 0$
2 $(2x + 1)(x - 3) = 0$
3 $(2x - 3)(x + 1) = 0$
4 $(2x + 3)(x - 1) = 0$

52 In the equation $x^2 + 10x + 24 = (x + a)(x + b)$, b is an integer. Find algebraically *all* possible values of b.

53 Solve $8m^2 + 20m = 12$ for m by factoring.

A.REI.4a: SOLVING QUADRATICS

54 Which equation has the same solution as $x^2 - 6x - 12 = 0$?
1 $(x + 3)^2 = 21$
2 $(x - 3)^2 = 21$
3 $(x + 3)^2 = 3$
4 $(x - 3)^2 = 3$

55 Which equation has the same solutions as $x^2 + 6x - 7 = 0$?
1 $(x + 3)^2 = 2$
2 $(x - 3)^2 = 2$
3 $(x - 3)^2 = 16$
4 $(x + 3)^2 = 16$

A.REI.4b: SOLVING QUADRATICS

56 If $4x^2 - 100 = 0$, the roots of the equation are
1 -25 and 25
2 -25, only
3 -5 and 5
4 -5, only

57 Write an equation that defines $m(x)$ as a trinomial where $m(x) = (3x - 1)(3 - x) + 4x^2 + 19$. Solve for x when $m(x) = 0$.

58 Solve the equation $4x^2 - 12x = 7$ algebraically for x.

59 A student was given the equation $x^2 + 6x - 13 = 0$ to solve by completing the square. The first step that was written is shown below.
$$x^2 + 6x = 13$$
The next step in the student's process was $x^2 + 6x + c = 13 + c$. State the value of c that creates a perfect square trinomial. Explain how the value of c is determined.

60 What are the roots of the equation $x^2 + 4x - 16 = 0$?
1 $2 \pm 2\sqrt{5}$
2 $-2 \pm 2\sqrt{5}$
3 $2 \pm 4\sqrt{5}$
4 $-2 \pm 4\sqrt{5}$

61 If the quadratic formula is used to find the roots of the equation $x^2 - 6x - 19 = 0$, the correct roots are
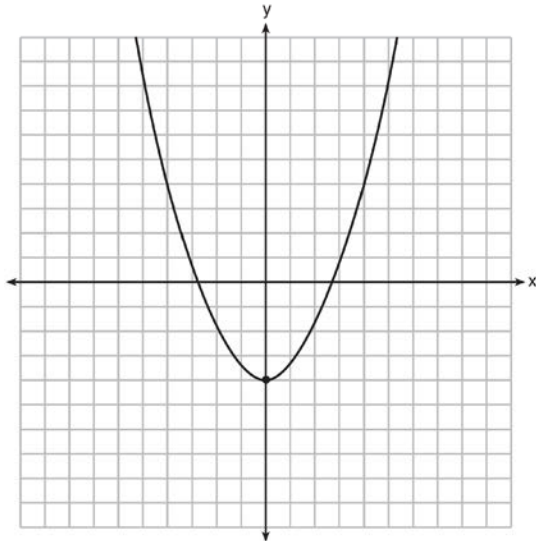1 $3 \pm 2\sqrt{7}$
2 $-3 \pm 2\sqrt{7}$
3 $3 \pm 4\sqrt{14}$
4 $-3 \pm 4\sqrt{14}$

62 Ryker is given the graph of the function
$y = \frac{1}{2}x^2 - 4$. He wants to find the zeros of the
function, but is unable to read them exactly from
the graph.

Find the zeros in simplest radical form.

A.CED.1: MODELING QUADRATICS

63 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?

1 $j^2 + 2 = 783$

2 $j^2 - 2 = 783$

3 $j^2 + 2j = 783$

4 $j^2 - 2j = 783$

A.CED.1: GEOMETRIC APPLICATIONS OF
QUADRATICS

64 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?

1 $8^2 + (x + 1) = x^2$

2 $x^2 + 8^2 = (x + 1)^2$

3 $8^2 + (x + 2) = x^2$

4 $x^2 + 8^2 = (x + 2)^2$

65 A school is building a rectangular soccer field that
has an area of 6000 square yards. The soccer field
must be 40 yards longer than its width. Determine
algebraically the dimensions of the soccer field, in
yards.

66 A rectangular garden measuring 12 meters by 16
meters is to have a walkway installed around it
with a width of x meters, as shown in the diagram
below. Together, the walkway and the garden have
an area of 396 square meters.
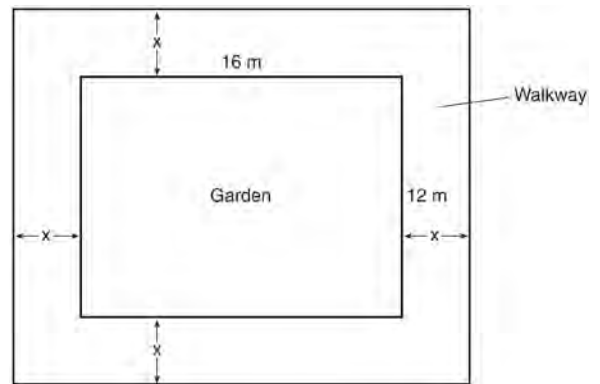
Write an equation that can be used to find x, the
width of the walkway. Describe how your equation
models the situation. Determine and state the
width of the walkway, in meters.

67 New Clarendon Park is undergoing renovations to its gardens. One garden that was originally a square is being adjusted so that one side is doubled in length, while the other side is decreased by three meters. The new rectangular garden will have an area that is 25% more than the original square garden. Write an equation that could be used to determine the length of a side of the original square garden. Explain how your equation models the situation. Determine the area, in square meters, of the new rectangular garden.

A.REI.10: GRAPHING QUADRATIC FUNCTIONS

68 Which point is *not* on the graph represented by $y = x^2 + 3x - 6$?

1   $(-6, 12)$
2   $(-4, -2)$
3   $(2, 4)$
4   $(3, -6)$

F.IF.4: GRAPHING QUADRATIC FUNCTIONS

69 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.
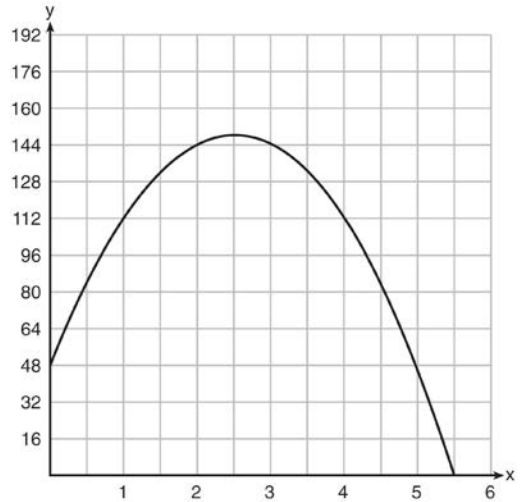
For which interval is the ball's height always *decreasing*?
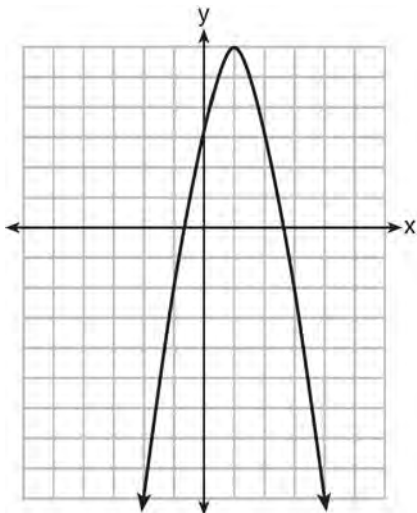
1   $0 \le x \le 2.5$
2   $0 < x < 5.5$
3   $2.5 < x < 5.5$
4   $x \ge 2$

F.IF.8a: GRAPHING QUADRATIC FUNCTIONS

70 a) Given the function $f(x) = -x^2 + 8x + 9$, state whether the vertex represents a maximum or minimum point for the function. Explain your answer.
b) Rewrite $f(x)$ in vertex form by completing the square.

15

F.IF.9: GRAPHING QUADRATIC FUNCTIONS

71 Let f be the function represented by the graph below.

Let g be a function such that $g(x) = -\frac{1}{2}x^2 + 4x + 3$.

Determine which function has the larger maximum value. Justify your answer.

POWERS
A.APR.1: ADDITION AND SUBTRACTION OF POLYNOMIALS

72 If $A = 3x^2 + 5x - 6$ and $B = -2x^2 - 6x + 7$, then $A - B$ equals
1   $-5x^2 - 11x + 13$
2   $5x^2 + 11x - 13$
3   $-5x^2 - x + 1$
4   $5x^2 - x + 1$

73 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?
1   $P(x) = -0.5x^2 + 500x - 150$
2   $P(x) = -0.5x^2 + 500x - 350$
3   $P(x) = -0.5x^2 - 500x + 350$
4   $P(x) = -0.5x^2 + 500x + 350$

74 Subtract $5x^2 + 2x - 11$ from $3x^2 + 8x - 7$. Express the result as a trinomial.

A.APR.1: MULTIPLICATION OF POLYNOMIALS

75 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
1   $5x - 11$
2   $6x^2 - 28x + 30$
3   $10x - 22$
4   $6x^2 - 6x - 11$

76 Express the product of $2x^2 + 7x - 10$ and $x + 5$ in standard form.

A.SSE.2: FACTORING POLYNOMIALS

77 Which expression is equivalent to $x^4 - 12x^2 + 36$?
1   $(x^2 - 6)(x^2 - 6)$
2   $(x^2 + 6)(x^2 + 6)$
3   $(6 - x^2)(6 + x^2)$
4   $(x^2 + 6)(x^2 - 6)$

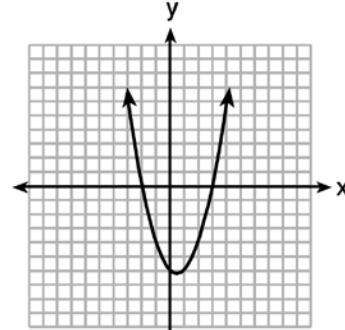78 When factored completely, the expression $p^4 - 81$ is equivalent to

1 $(p^2 + 9)(p^2 - 9)$

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

3 $(p^2 + 9)(p + 3)(p - 3)$
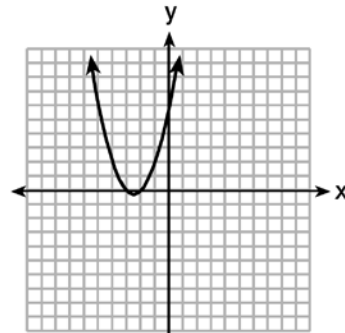
4 $(p + 3)(p - 3)(p + 3)(p - 3)$

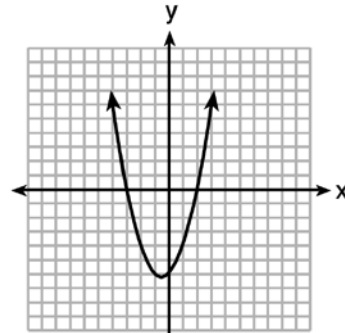79 Factor the expression $x^4 + 6x^2 - 7$ completely.

A.APR.3: ZEROS OF POLYNOMIALS

80 The graphs below represent functions defined by polynomials. For which function are the zeros of the polynomials 2 and -3?
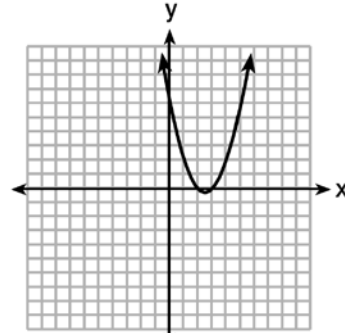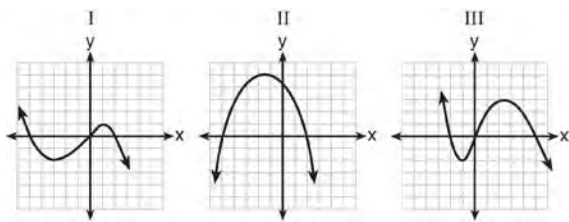

1

2

3

4

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

1 I, only
2 II, only
3 I and III
4 I, II, and III

82 For which function defined by a polynomial are the zeros of the polynomial −4 and −6?

1 $y = x^2 - 10x - 24$

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

3 $y = x^2 + 10x - 24$

4 $y = x^2 - 10x + 24$

F.IF.8a: ZEROS OF POLYNOMIALS

83 The zeros of the function $f(x) = (x + 2)^2 - 25$ are
1 −2 and 5
2 −3 and 7
3 −5 and 2
4 −7 and 3

F.IF.8b: EVALUATING EXPONENTIAL EXPRESSIONS

84 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?
1 2589
2 6510
3 15,901
4 18,490

F.LE.1c: MODELING EXPONENTIAL EQUATIONS

85 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?
1 linear function with a negative rate of change
2 linear function with a positive rate of change
3 exponential decay function
4 exponential growth function

F.BF.1a: MODELING EXPONENTIAL EQUATIONS

86 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?

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

2 $3000(1 - 0.02)^{16}$

3 $3000(1 + 0.02)^{18}$

4 $3000(1 - 0.02)^{18}$

87 Rhonda deposited $3000 in an account in the Merrick National Bank, earning 4.2% interest, compounded annually. She made no deposits or withdrawals. Write an equation that can be used to find B, her account balance after t years.
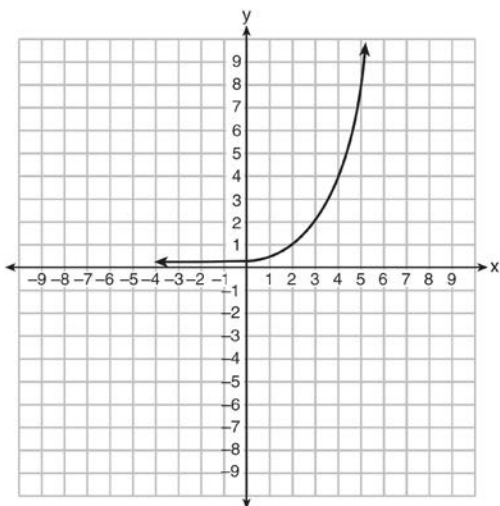
F.LE.2: MODELING EXPONENTIAL EQUATIONS

88 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

1   $F(x) = 3^x$

2   $F(x) = 3x$

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

4   $F(x) = 2x + 3$

89 Write an exponential equation for the graph shown below.

Explain how you determined the equation.

F.IF.8b: MODELING EXPONENTIAL EQUATIONS

90 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?

1   0.98, the percent of money in the account initially

2   0.98, the percent of money in the account after x years

3   5000, the amount of money in the account initially

4   5000, the amount of money in the account after x years

F.LE.5: MODELING EXPONENTIAL EQUATIONS

91 The breakdown of a sample of a chemical compound is represented by the function $p(t) = 300(0.5)^t$, where $p(t)$ represents the number of milligrams of the substance and t represents the time, in years. In the function $p(t)$, explain what 0.5 and 300 represent.

A.SSE.3c: SOLVING EXPONENTIAL EQUATIONS

92 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?

1   32

2   16

3   8

4   4

RADICALS
F.IF.7b: GRAPHING ROOT FUNCTIONS

93 Draw the graph of $y = \sqrt{x} - 1$ on the set of axes below.
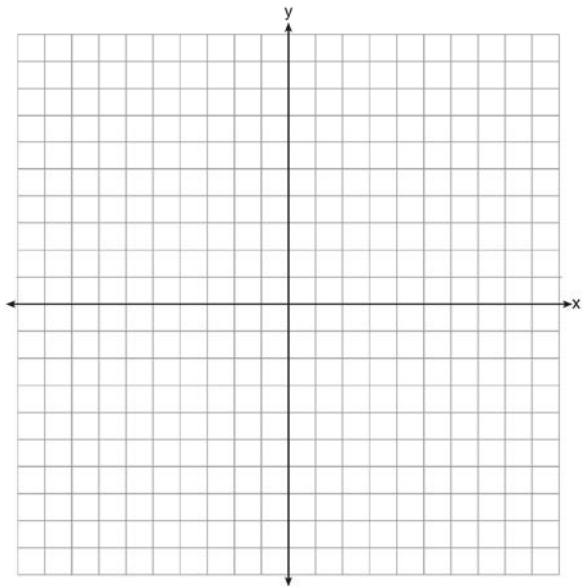
94 On the set of axes below, graph the function represented by $y = \sqrt[3]{x - 2}$ for the domain $-6 \le x \le 10$.
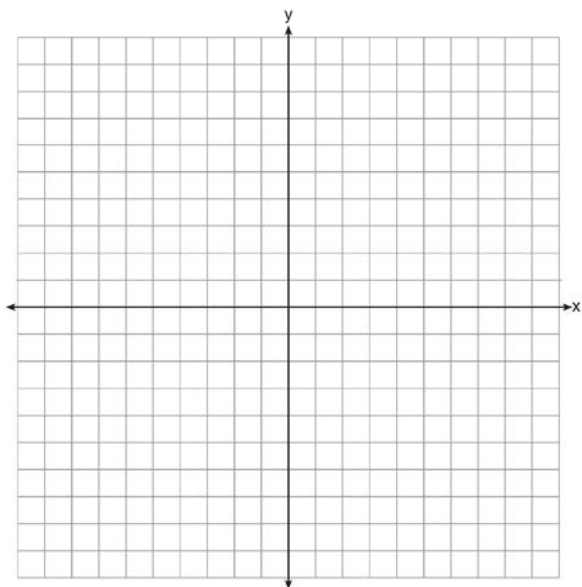
FUNCTIONS
F.IF.2: FUNCTIONAL NOTATION

95 The graph of $y = f(x)$ is shown below.
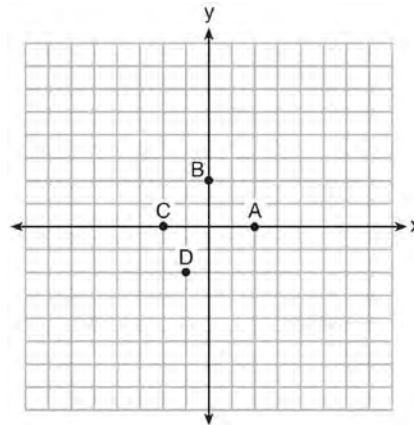
Which point could be used to find $f(2)$?
1   A
2   B
3   C
4   D

F.IF.1: DEFINING FUNCTIONS

96 A function is shown in the table below.

x	f(x)
-4	2
-1	-4
0	-2
3	16

If included in the table, which ordered pair, $(-4, 1)$ or $(1, -4)$, would result in a relation that is no longer a function? Explain your answer.

97 The function f has a domain of $\{1, 3, 5, 7\}$ and a range of $\{2, 4, 6\}$. Could f be represented by $\{(1, 2), (3, 4), (5, 6), (7, 2)\}$? Justify your answer.

F.IF.2: DOMAIN AND RANGE

98 If $f(x) = \dfrac{1}{3}x + 9$, which statement is always true?

1   $f(x) < 0$
2   $f(x) > 0$
3   If $x < 0$, then $f(x) < 0$.
4   If $x > 0$, then $f(x) > 0$.

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

1   $0 \le y \le 8$
2   $0 \le y < \infty$
3   $2 \le y \le 6$
4   $-\infty < y < \infty$

F.IF.5: DOMAIN AND RANGE

100 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

1   $-3 \le t \le 3$
2   $0 \le t \le 3$
3   $0 \le h(t) \le 144$
4   all real numbers

101 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?

1   $\{\dots -2, -1, 0, 1, 2, 3, \dots\}$
2   $\{-2, -1, 0, 1, 2, 3\}$
3   $\{0, \dfrac{1}{2}, 1, 1\dfrac{1}{2}, 2, 2\dfrac{1}{2}\}$
4   $\{0, 1, 2, 3, \dots\}$

102 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?

1   integers
2   whole numbers
3   irrational numbers
4   rational numbers

F.LE.1b: FAMILIES OF FUNCTIONS

103 Which table of values represents a linear relationship?

1

x	f(x)
-1	-3
0	-2
1	1
2	6
3	13

2

x	f(x)
-1	$\frac{1}{2}$
0	1
1	2
2	4
3	8

3

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

4

x	f(x)
-1	-1
0	0
1	1
2	8
3	27

104 Which situation could be modeled by using a linear function?
 1 a bank account balance that grows at a rate of 5% per year, compounded annually
 2 a population of bacteria that doubles every 4.5 hours
 3 the cost of cell phone service that charges a base amount plus 20 cents per minute
 4 the concentration of medicine in a person's body that decays by a factor of one-third every hour

F.LE.2: FAMILIES OF FUNCTIONS

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

1

2

3

4
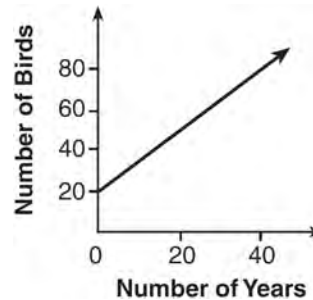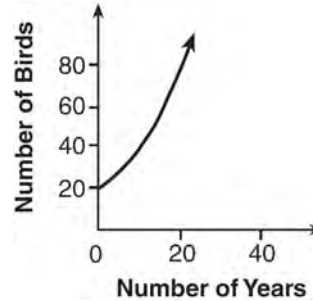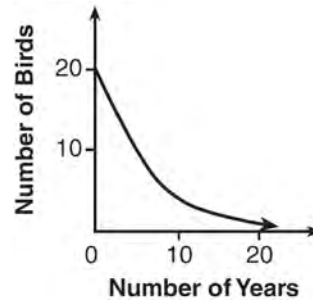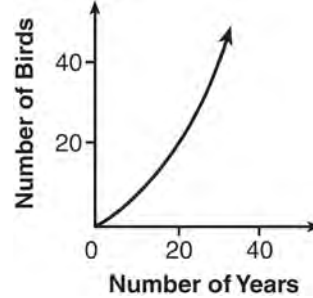
F.BF.3: TRANSFORMATIONS WITH FUNCTIONS AND RELATIONS

106 On the axes below, graph $f(x) = |3x|$.
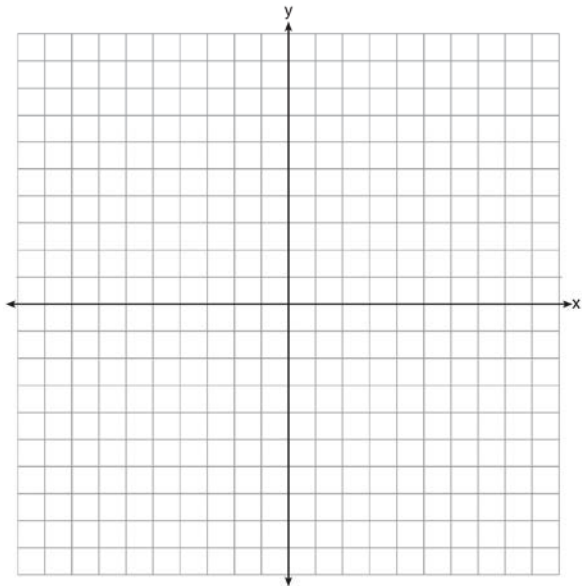
If $g(x) = f(x) - 2$, how is the graph of $f(x)$ translated to form the graph of $g(x)$? If $h(x) = f(x - 4)$, how is the graph of $f(x)$ translated to form the graph of $h(x)$?

107 The graph of the equation $y = ax^2$ is shown below.
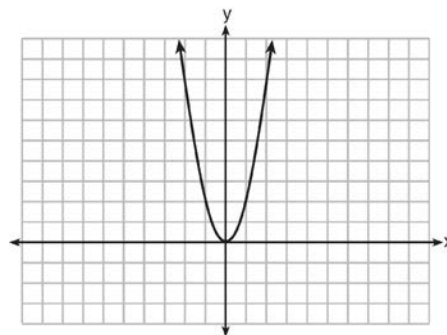
If a is multiplied by $-\frac{1}{2}$, the graph of the new equation is
1 wider and opens downward
2 wider and opens upward
3 narrower and opens downward
4 narrower and opens upward

108 How does the graph of $f(x) = 3(x - 2)^2 + 1$ compare to the graph of $g(x) = x^2$?
1 The graph of $f(x)$ is wider than the graph of $g(x)$, and its vertex is moved to the left 2 units and up 1 unit.
2 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.
3 The graph of $f(x)$ is narrower than the graph of $g(x)$, and its vertex is moved to the left 2 units and up 1 unit.
4 The graph of $f(x)$ is wider than the graph of $g(x)$, and its vertex is moved to the right 2 units and up 1 unit.

109 The vertex of the parabola represented by $f(x) = x^2 - 4x + 3$ has coordinates $(2, -1)$. Find the coordinates of the vertex of the parabola defined by $g(x) = f(x - 2)$. Explain how you arrived at your answer. [The use of the set of axes below is optional.]
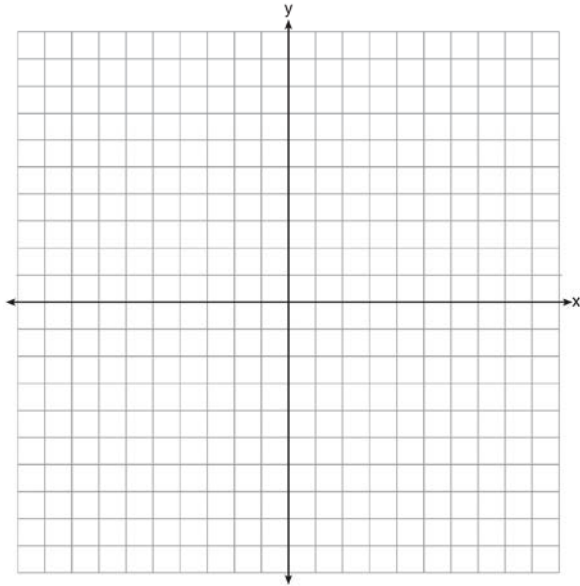
F.IF.4: RELATING GRAPHS TO EVENTS

110 During a snowstorm, a meteorologist tracks the amount of accumulating snow. For the first three hours of the storm, the snow fell at a constant rate of one inch per hour. The storm then stopped for two hours and then started again at a constant rate of one-half inch per hour for the next four hours.
a) On the grid below, draw and label a graph that models the accumulation of snow over time using the data the meteorologist collected.
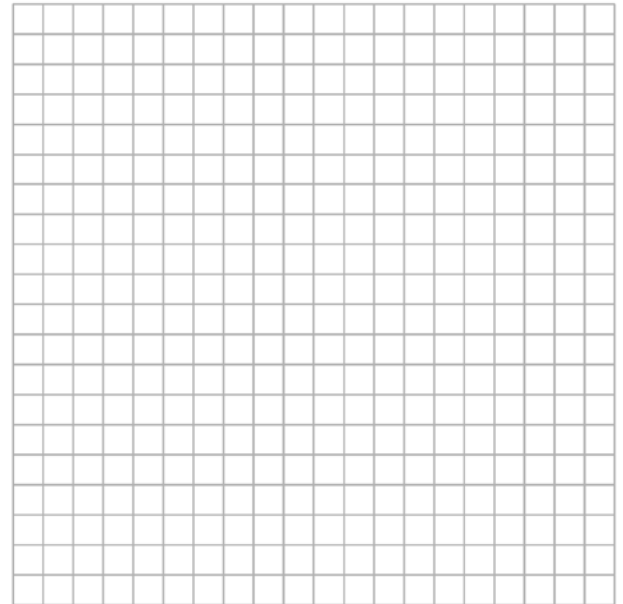
b) If the snowstorm started at 6 p.m., how much snow had accumulated by midnight?

F.IF.7b: GRAPHING PIECEWISE-DEFINED FUNCTIONS

111 At an office supply store, if a customer purchases fewer than 10 pencils, the cost of each pencil is $1.75. If a customer purchases 10 or more pencils, the cost of each pencil is $1.25. Let c be a function for which $c(x)$ is the cost of purchasing x pencils, where x is a whole number.

$$c(x) = \begin{cases} 1.75x, & \text{if } 0 \le x \le 9 \\ 1.25x, & \text{if } x \ge 10 \end{cases}$$

Create a graph of c on the axes below.
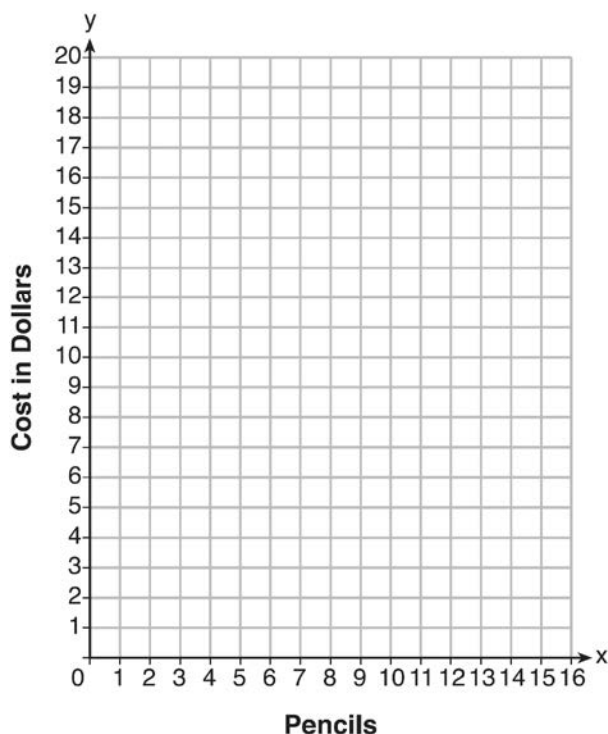
A customer brings 8 pencils to the cashier. The cashier suggests that the total cost to purchase 10 pencils would be less expensive. State whether the cashier is correct or incorrect. Justify your answer.

112 Graph the following function on the set of axes below.

$$f(x) = \begin{cases} |x|, & -3 \le x < 1 \\ 4, & 1 \le x \le 8 \end{cases}$$

25
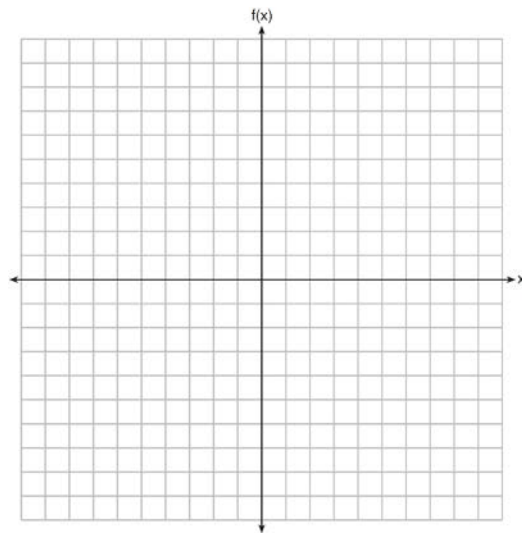
113 A function is graphed on the set of axes below.
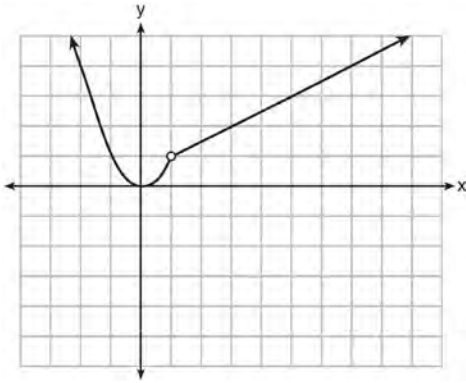
Which function is related to the graph?

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

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

3 $f(x) = \begin{cases} x^2, x < 1 \\ 2x - 7, x > 1 \end{cases}$

4 $f(x) = \begin{cases} x^2, x < 1 \\ \dfrac{3}{2}x - \dfrac{9}{2}, x > 1 \end{cases}$

F.IF.7b: GRAPHING STEP FUNCTIONS

114 The table below lists the total cost for parking for a period of time on a street in Albany, N.Y. The total cost is for any length of time up to and including the hours parked. For example, parking for up to and including 1 hour would cost $1.25; parking for 3.5 hours would cost $5.75.

Hours Parked	Total Cost
1	1.25
2	2.50
3	4.00
4	5.75
5	7.75
6	10.00

Graph the step function that represents the cost for the number of hours parked.
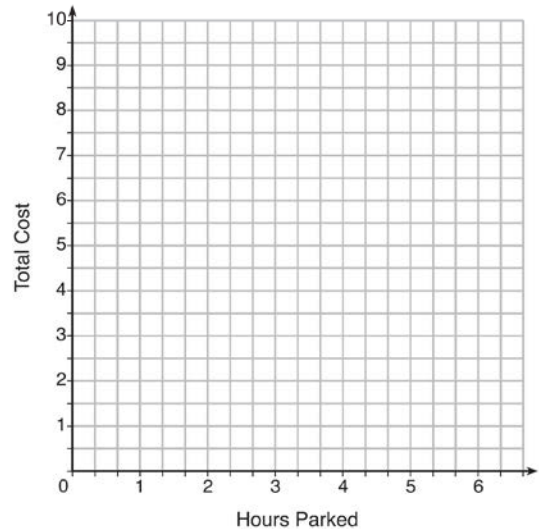
Explain how the cost per hour to park changes over the six-hour period.

F.IF.3: SEQUENCES

115 If $f(1) = 3$ and $f(n) = -2f(n-1) + 1$, then $f(5) =$
1   −5
2   11
3   21
4   43

116 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
1   1
2   −11
3   5
4   17

117 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 $f(0) = 3$
1   I and II
2   II, only
3   III, only
4   I and III

F.LE.2: SEQUENCES

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

Term 1   Term 2   Term 3
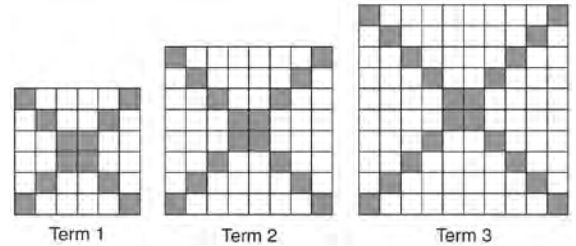
Assuming the pattern continues, which formula determines a_n, the number of shaded squares in the nth term?
1   $a_n = 4n + 12$
2   $a_n = 4n + 8$
3   $a_n = 4n + 4$
4   $a_n = 4n + 2$

119 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 nth term of this sequence?
1   $a_n = 8n + 10$
2   $a_n = 8n - 14$
3   $a_n = 16n + 10$
4   $a_n = 16n - 38$

SYSTEMS
A.REI.5: SOLVING LINEAR SYSTEMS

120 Which system of equations has the same solution as the system below?

$$2x + 2y = 16$$
$$3x - y = 4$$

1    $2x + 2y = 16$
     $6x - 2y = 4$

2    $2x + 2y = 16$
     $6x - 2y = 8$

3    $x + y = 16$
     $3x - y = 4$

4    $6x + 6y = 48$
     $6x + 2y = 8$

A.REI.6: SOLVING LINEAR SYSTEMS

121 Guy and Jim work at a furniture store. Guy is paid $185 per week plus 3% of his total sales in dollars, x, which can be represented by $g(x) = 185 + 0.03x$. Jim is paid $275 per week plus 2.5% of his total sales in dollars, x, which can be represented by $f(x) = 275 + 0.025x$. Determine the value of x, in dollars, that will make their weekly pay the same.

A.CED.2: MODELING LINEAR SYSTEMS

122 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?

1    $m + f = 3.95$
     $m + 0.005 = f$

2    $m - 3.95 = f$
     $f + 0.005 = m$

3    $f - 3.95 = m$
     $m + 0.005 = f$

4    $m + f = 3.95$
     $f + 0.005 = m$

123 Jacob and Zachary go to the movie theater and purchase refreshments for their friends. Jacob spends a total of $18.25 on two bags of popcorn and three drinks. Zachary spends a total of $27.50 for four bags of popcorn and two drinks. Write a system of equations that can be used to find the price of one bag of popcorn and the price of one drink. Using these equations, determine and state the price of a bag of popcorn and the price of a drink, to the *nearest cent*.

A.REI.6: MODELING LINEAR SYSTEMS

124 Next weekend Marnie wants to attend either carnival *A* or carnival *B*. Carnival *A* charges $6 for admission and an additional $1.50 per ride. Carnival *B* charges $2.50 for admission and an additional $2 per ride.
a) In function notation, write $A(x)$ to represent the total cost of attending carnival *A* and going on *x* rides. In function notation, write $B(x)$ to represent the total cost of attending carnival *B* and going on *x* rides.
b) Determine the number of rides Marnie can go on such that the total cost of attending each carnival is the same. [Use of the set of axes below is optional.]
c) Marnie wants to go on five rides. Determine which carnival would have the lower total cost. Justify your answer.
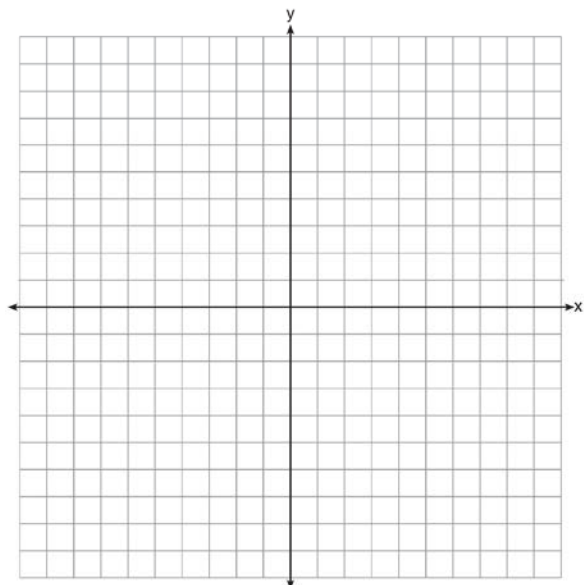
125 A local business was looking to hire a landscaper to work on their property. They narrowed their choices to two companies. Flourish Landscaping Company charges a flat rate of $120 per hour. Green Thumb Landscapers charges $70 per hour plus a $1600 equipment fee. Write a system of equations representing how much each company charges. Determine and state the number of hours that must be worked for the cost of each company to be the same. [The use of the grid below is optional.] If it is estimated to take at least 35 hours to complete the job, which company will be less expensive? Justify your answer.
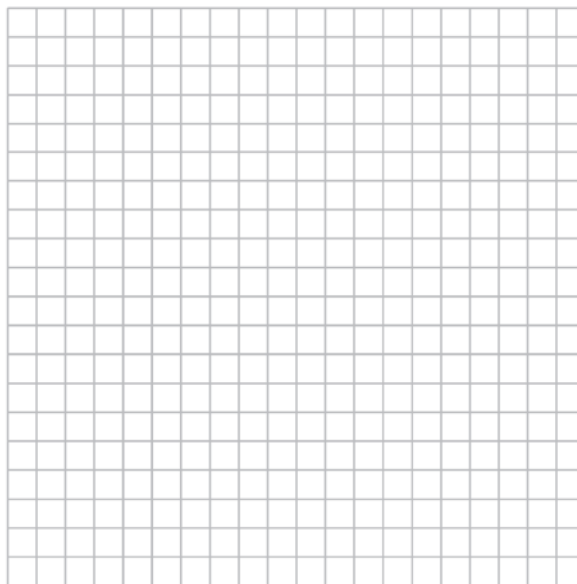
A.CED.3: MODELING SYSTEMS OF LINEAR INEQUALITIES

126 A high school drama club is putting on their annual theater production. There is a maximum of 800 tickets for the show. The costs of the tickets are $6 before the day of the show and $9 on the day of the show. To meet the expenses of the show, the club must sell at least $5,000 worth of tickets.
a) Write a system of inequalities that represent this situation.
b) The club sells 440 tickets before the day of the show. Is it possible to sell enough additional tickets on the day of the show to at least meet the expenses of the show? Justify your answer.

127 Edith babysits for x hours a week after school at a
job that pays $4 an hour. She has accepted a job
that pays $8 an hour as a library assistant working y
hours a week. She will work both jobs. She is able
to work no more than 15 hours a week, due to
school commitments. Edith wants to earn at least
$80 a week, working a combination of both jobs.
Write a system of inequalities that can be used to
represent the situation. Graph these inequalities on
the set of axes below.
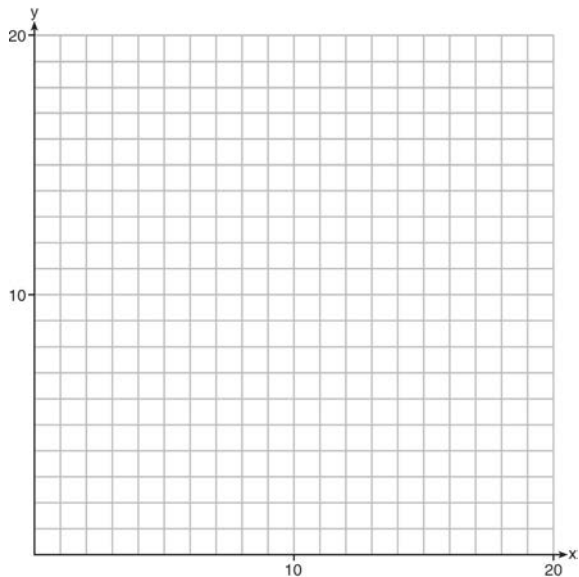
Determine and state one combination of hours that
will allow Edith to earn *at least* $80 per week while
working *no more than* 15 hours.

A.REI.12: GRAPHING SYSTEMS OF LINEAR
INEQUALITIES

128 Given: $y + x > 2$

$y \le 3x - 2$

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

1

2

3

4
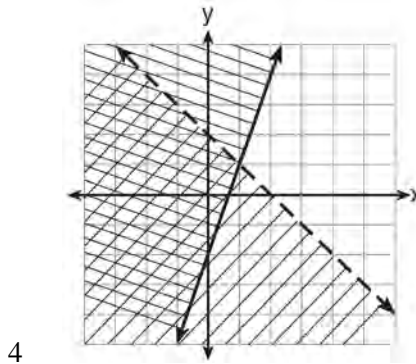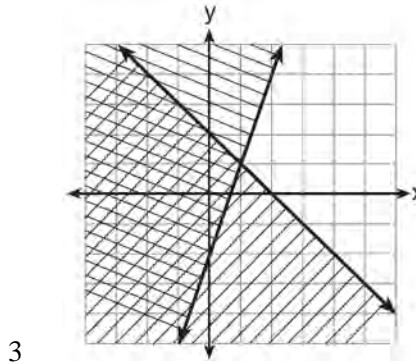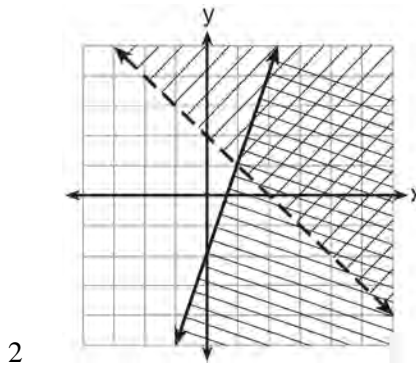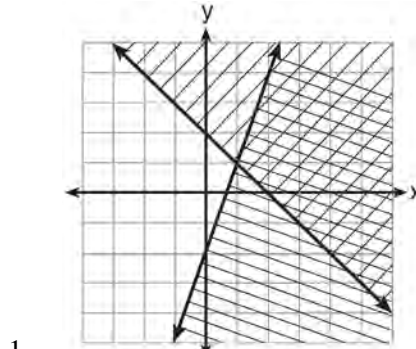
129 What is one point that lies in the solution set of the system of inequalities graphed below?
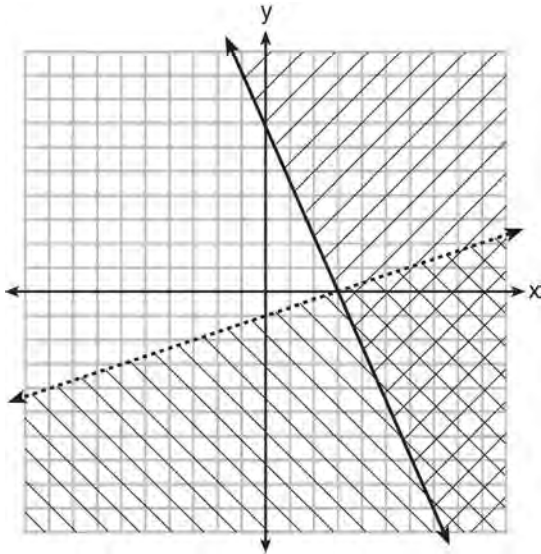
1   $(7,0)$
2   $(3,0)$
3   $(0,7)$
4   $(-3,5)$

130 Which ordered pair is *not* in the solution set of
$y > -\dfrac{1}{2}x + 5$ and $y \le 3x - 2$?

1   $(5,3)$
2   $(4,3)$
3   $(3,4)$
4   $(4,4)$

131 The graph of an inequality is shown below.
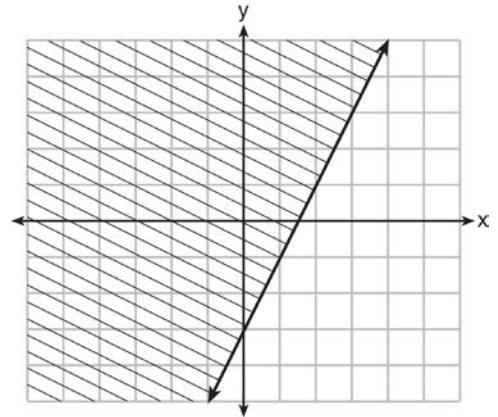
a) Write the inequality represented by the graph.
b) On the same set of axes, graph the inequality $x + 2y < 4$.
c) The two inequalities graphed on the set of axes form a system. Oscar thinks that the point $(2, 1)$ is in the solution set for this system of inequalities. Determine and state whether you agree with Oscar. Explain your reasoning.

A.REI.7: QUADRATIC-LINEAR SYSTEMS

132 Let $f(x) = -2x^2$ and $g(x) = 2x - 4$. On the set of axes below, draw the graphs of $y = f(x)$ and $y = g(x)$.
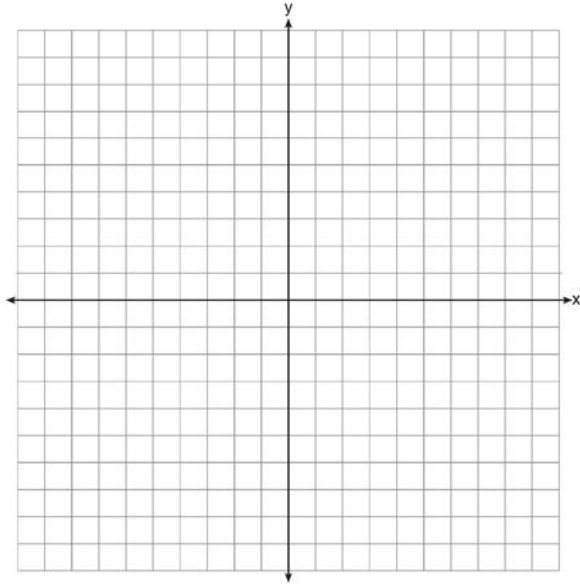
Using this graph, determine and state *all* values of x for which $f(x) = g(x)$.

133 A company is considering building a manufacturing plant. They determine the weekly production cost at site A to be $A(x) = 3x^2$ while the production cost at site B is $B(x) = 8x + 3$, where x represents the number of products, *in hundreds*, and $A(x)$ and $B(x)$ are the production costs, *in hundreds of dollars*. Graph the production cost functions on the set of axes below and label them site A and site B.
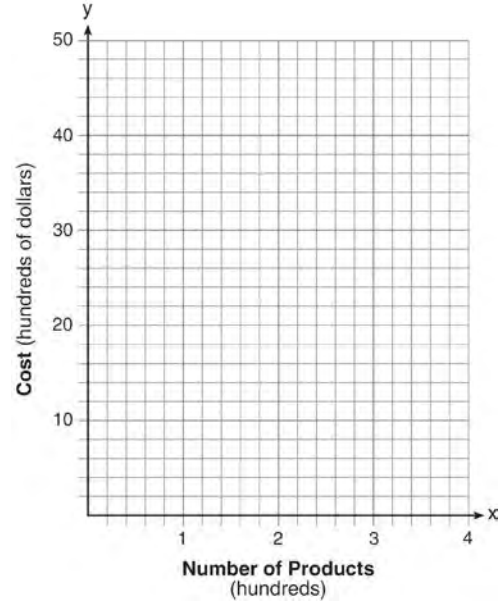
State the positive value(s) of x for which the production costs at the two sites are equal. Explain how you determined your answer. If the company plans on manufacturing 200 products per week, which site should they use? Justify your answer.

A.REI.11: NONLINEAR SYSTEMS

134 Two functions, $y = |x - 3|$ and $3x + 3y = 27$, are graphed on the same set of axes. Which statement is true about the solution to the system of equations?
1 $(3,0)$ is the solution to the system because it satisfies the equation $y = |x - 3|$.
2 $(9,0)$ is the solution to the system because it satisfies the equation $3x + 3y = 27$.
3 $(6,3)$ is the solution to the system because it satisfies both equations.
4 $(3,0)$, $(9,0)$, and $(6,3)$ are the solutions to the system of equations because they all satisfy at least one of the equations.

Algebra 1 Regents Exam Questions by Common Core State Standard: Topic
Answer Section

1 ANS: 3

$\sqrt{16} + \sqrt{9} = \frac{7}{1}$ may be expressed as the ratio of two integers.

PTS: 2   REF: 061413a1   NAT: N.RN.3   TOP: Classifying Numbers

2 ANS: 1   PTS: 2   REF: 081401a1   NAT: N.RN.3
   TOP: Classifying Numbers

3 ANS:
   Correct. The sum of a rational and irrational is irrational.

PTS: 2   REF: 011525a1   NAT: N.RN.3   TOP: Classifying Numbers

4 ANS: 1   PTS: 2   REF: 061401a1   NAT: A.REI.1
   TOP: Identifying Properties

5 ANS:

$\frac{33 + 12}{180} = 25\%$

PTS: 2   REF: 011526a1   NAT: S.ID.5   TOP: Frequency Histograms and Tables

6 ANS:
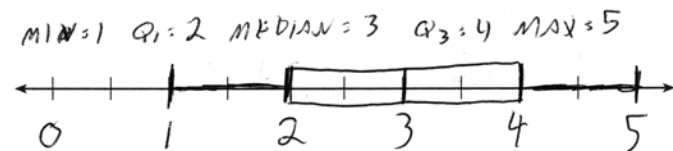
PTS: 2   REF: 061432a1   NAT: S.ID.1   TOP: Box Plots

7 ANS: 3

		Company 1	Company 2
1	median salary	33,500	36,250
2	mean salary	33,750	44,125
3	salary range	8,000	36,000
4	mean age	28.25	28.25

PTS: 2   REF: 081404a1   NAT: S.ID.2   TOP: Central Tendency and Dispersion

8 ANS: 3

	Mean	Q1	Median	Q3	IQR
Semester 1	86.8	80.5	88	92.5	2
Semester 2	87	80	88	92	2

PTS: 2   REF: 061419a1   NAT: S.ID.2   TOP: Central Tendency and Dispersion

9 ANS: 4   PTS: 2   REF: 011514a1   NAT: S.ID.2
   TOP: Central Tendency and Dispersion

10 ANS: 4   PTS: 2   REF: 081421a1   NAT: S.ID.6a
    TOP: Regression

11 ANS:
   $y = 0.05x - 0.92$

   PTS: 2   REF: fall1307a1   NAT: S.ID.6a   TOP: Regression
12 ANS:

   $y = 836.47(2.05)^x$ The data appear to grow at an exponential rate. $y = 836.47(2.05)^2 \approx 3515$.

   PTS: 4   REF: fall1313a1   NAT: S.ID.6a   TOP: Regression
13 ANS: 3   PTS: 2   REF: 061411a1   NAT: S.ID.8
   TOP: Correlation Coefficient and Residuals
14 ANS:
   $r \approx 0.94$. The correlation coefficient suggests that as calories increase, so does sodium.

   PTS: 4   REF: 011535a1   NAT: S.ID.8   TOP: Correlation Coefficient and Residuals
15 ANS:
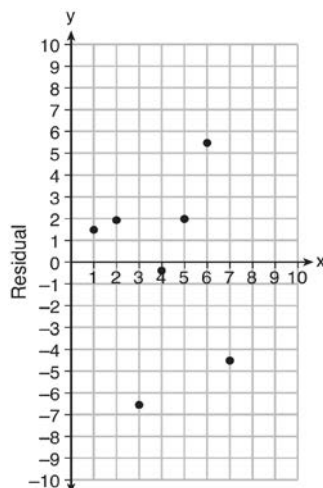
   $y = 6.32x + 22.43$ Based on the residual plot, the equation is a good fit for the data
   because the residual values are scattered without a pattern and are fairly evenly distributed above and below the
   x-axis.

   PTS: 4   REF: fall1314a1   NAT: S.ID.6b   TOP: Correlation Coefficient and Residuals
16 ANS:
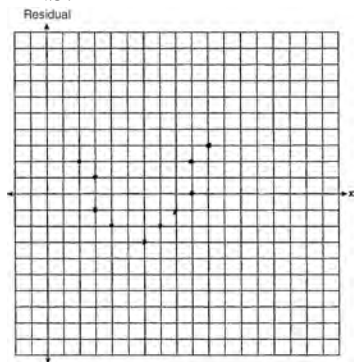
   The line is a poor fit because the residuals form a pattern.

   PTS: 2   REF: 081431a1   NAT: S.ID.6b   TOP: Correlation Coefficient and Residuals

17 ANS: 3
A correlation coefficient close to –1 or 1 indicates a good fit. For a residual plot, there should be no observable pattern and a similar distribution of residuals above and below the *x*-axis.

PTS: 2   REF: fall1303a1   NAT: S.ID.6c   TOP: Correlation Coefficient and Residuals

18 ANS: 4

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

PTS: 2   REF: 081414a1   NAT: F.IF.6   TOP: Rate of Change

19 ANS: 1

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

PTS: 2   REF: 011521a1   NAT: F.IF.6   TOP: Rate of Change

20 ANS: 1

$\dfrac{110 - 40}{2 - 1} > \dfrac{350 - 230}{8 - 6}$

$\quad\quad 70 > 60$

PTS: 2   REF: 061418a1   NAT: F.IF.6   TOP: Rate of Change

21 ANS: 4

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

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

PTS: 2   REF: spr1301a1   NAT: F.IF.6   TOP: Rate of Change

22 ANS: 2   PTS: 2   REF: 011502a1   NAT: N.Q.1
TOP: Conversions

23 ANS: 1

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

$6x - 12 = 12$

$\quad 6x = 24$

$\quad\quad x = 4$

PTS: 2   REF: 081420a1   NAT: A.REI.3   TOP: Solving Linear Equations
KEY: fractional expressions

24 ANS: 1

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

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

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

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

PTS: 2   REF: 061405a1   NAT: A.REI.3   TOP: Solving Linear Equations
KEY: fractional expressions
25 ANS: 2   PTS: 2   REF: 011501a1   NAT: A.SSE.1a
TOP: Modeling Linear Equations
26 ANS: 2   PTS: 2   REF: 081402a1   NAT: F.LE.5
TOP: Modeling Linear Equations
27 ANS: 3   PTS: 2   REF: 061407a1   NAT: F.LE.5
TOP: Modeling Linear Equations
28 ANS:

$A(n)=175-2.75n$ $0=175-2.75n$ After 63 weeks, Caitlin will not have enough money to rent another movie.

$$2.75n=175$$

$$n=63.6$$

PTS: 4   REF: 061435a1   NAT: F.BF.1a   TOP: Modeling Linear Equations
29 ANS:

$12x+9(2x)+5(3x)=15$ $6\left(\dfrac{1}{3}\right)=2$ pounds

$$45x=15$$

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

PTS: 2   REF: spr1305a1   NAT: A.CED.1   TOP: Modeling Linear Equations
30 ANS: 4   PTS: 2   REF: 061422a1   NAT: A.CED.1
TOP: Modeling Linear Equations
31 ANS: 2   PTS: 2   REF: 061416a1   NAT: A.CED.1
TOP: Modeling Linear Equations
32 ANS:

$15x+36=10x+48$

$$5x=12$$

$$x=2.4$$

PTS: 2   REF: 011531a1   NAT: A.CED.1   TOP: Modeling Linear Equations
33 ANS: 4   PTS: 2   REF: 011523a1   NAT: A.CED.2
TOP: Modeling Linear Equations

34 ANS:

$2.35c + 5.50d = 89.50$ Pat's numbers are not possible: $2.35(8) + 5.50(14) \neq 89.50$ $2.35c + 5.50(22 - c) = 89.50$

$$18.80 + 77.00 \neq 89.50 \quad 2.35c + 121 - 5.50c = 89.50$$

$$95.80 \neq 89.50 \qquad\qquad -3.15c = -31.50$$

$$c = 10$$

PTS: 4   REF: 061436a1   NAT: A.CED.2   TOP: Modeling Linear Equations

35 ANS:
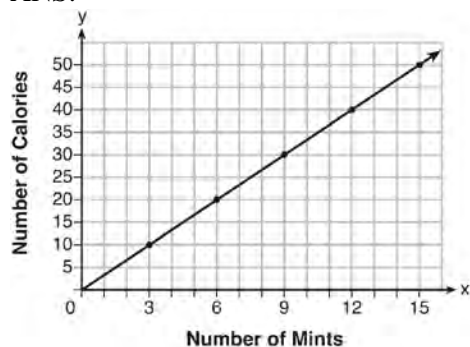
$$C(x) = \frac{10}{3}x \quad 180 = \frac{10}{3}x$$

$$540 = 10x$$

$$54 = x$$

PTS: 4   REF: fall1308a1   NAT: A.CED.2   TOP: Graphing Linear Functions

36 ANS: 2   PTS: 2   REF: 081413a1   NAT: A.CED.2

TOP: Graphing Linear Functions

37 ANS: 4

$$m = \frac{11 - 1}{3 - (-2)} = \frac{10}{5} = 2 \quad y = mx + b \quad y = 2x + 5$$

$$11 = 2(3) + b \quad 9 = 2(2) + 5$$

$$5 = b$$

PTS: 2   REF: 011511a1   NAT: A.REI.10   TOP: Graphing Linear Functions

38 ANS:
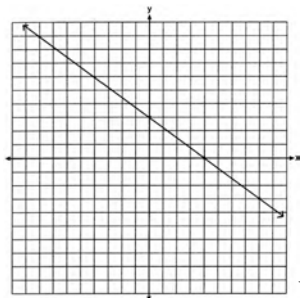
No, because $(3, 2)$ is not on the graph.

PTS: 2   REF: 061429a1   NAT: A.REI.10   TOP: Graphing Linear Functions

39 ANS: 4

$$y + 3 = 6(0)$$
$$y = -3$$

PTS: 2   REF: 011509a1   NAT: F.IF.4   TOP: Graphing Linear Functions

40 ANS: 1

$$4x - 5(0) = 40$$
$$4x = 40$$
$$x = 10$$

PTS: 2   REF: 081408a1   NAT: F.IF.4   TOP: Graphing Linear Functions

41 ANS: 1

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

PTS: 2   REF: 061423a1   NAT: A.CED.4   TOP: Transforming Formulas

42 ANS: 1   PTS: 2   REF: 011516a1   NAT: A.CED.4
TOP: Transforming Formulas

43 ANS:

$$A = \frac{1}{2} h(b_1 + b_2) \quad b_1 = \frac{2(60)}{6} - 12 = 20 - 12 = 8$$
$$\frac{2A}{h} = b_1 + b_2$$
$$\frac{2A}{h} - b_2 = b_1$$

PTS: 4   REF: 081434a1   NAT: A.CED.4   TOP: Transforming Formulas

44 ANS: 1

$$7 - \frac{2}{3} x < x - 8$$
$$15 < \frac{5}{3} x$$
$$9 < x$$

PTS: 2   REF: 011507a1   NAT: A.REI.3   TOP: Solving Linear Inequalities

45 ANS:

6. $3x + 9 \leq 5x - 3$

$12 \leq 2x$

$6 \leq x$

PTS: 2   REF: 081430a1   NAT: A.REI.3   TOP: Solving Linear Inequalities

46 ANS:

$2(-1) + a(-1) - 7 > -12$ $a = 2$

$-a - 9 > -12$

$-a > -3$

$a < 3$

PTS: 2   REF: 061427a1   NAT: A.REI.3   TOP: Solving Linear Inequalities

47 ANS: 3   PTS: 2   REF: 011513a1   NAT: A.CED.1

TOP: Modeling Linear Inequalities

48 ANS:

$8x + 11y \geq 200$ $8x + 11(15) \geq 200$

$8x + 165 \geq 200$

$8x \geq 35$

$x \geq 4.375$

5 hours

PTS: 4   REF: fall1309a1   NAT: A.CED.3   TOP: Modeling Linear Inequalities

49 ANS:
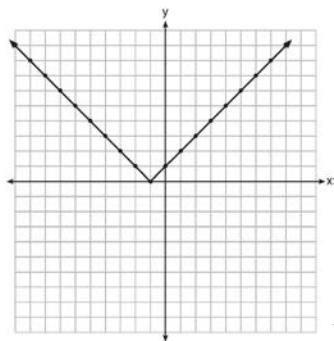
Range: $y \geq 0$. The function is increasing for $x > -1$.

PTS: 4   REF: fall1310a1   NAT: F.IF.7b   TOP: Graphing Absolute Value Functions

50 ANS: 3   PTS: 2   REF: 061412a1   NAT: A.SSE.3a

TOP: Solving Quadratics

51 ANS: 4   PTS: 2   REF: 011503a1   NAT: A.SSE.3a

TOP: Solving Quadratics

52 ANS:

$x^2 + 10x + 24 = (x + 4)(x + 6) = (x + 6)(x + 4)$. 6 and 4

PTS: 2   REF: 081425a1   NAT: A.SSE.3a   TOP: Solving Quadratics

53 ANS:

$8m^2 + 20m - 12 = 0$

$4(2m^2 + 5m - 3) = 0$

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

$$m = \frac{1}{2}, -3$$

PTS: 2   REF: fall1305a1   NAT: A.SSE.3a   TOP: Solving Quadratics

54 ANS: 2

$x^2 - 6x = 12$

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

$(x - 3)^2 = 21$

PTS: 2   REF: 061408a1   NAT: A.REI.4a   TOP: Solving Quadratics
KEY: completing the square

55 ANS: 4

$x^2 + 6x = 7$

$x^2 + 6x + 9 = 7 + 9$

$(x + 3)^2 = 16$

PTS: 2   REF: 011517a1   NAT: A.REI.4a   TOP: Solving Quadratics
KEY: completing the square

56 ANS: 3   PTS: 2   REF: 081403a1   NAT: A.REI.4b
TOP: Solving Quadratics   KEY: taking square roots

57 ANS:

$m(x) = (3x - 1)(3 - x) + 4x^2 + 19$ $x^2 + 10x + 16 = 0$

$m(x) = 9x - 3x^2 - 3 + x + 4x^2 + 19$ $(x + 8)(x + 2) = 0$

$m(x) = x^2 + 10x + 16$ $x = -8, -2$

PTS: 4   REF: 061433a1   NAT: A.REI.4b   TOP: Solving Quadratics
KEY: factoring

58 ANS:

$$4x^2 - 12x - 7 = 0$$

$$(4x^2 - 14x) + (2x - 7) = 0$$

$$2x(2x - 7) + (2x - 7) = 0$$

$$(2x + 1)(2x - 7) = 0$$

$$x = -\frac{1}{2}, \frac{7}{2}$$

PTS: 2   REF: 011529a1   NAT: A.REI.4b   TOP: Solving Quadratics
KEY: factoring

59 ANS:

$$\left(\frac{6}{2}\right)^2 = 9$$

PTS: 2   REF: 081432a1   NAT: A.REI.4b   TOP: Solving Quadratics
KEY: completing the square

60 ANS: 2

$$x = \frac{-4 \pm \sqrt{4^2 - 4(1)(-16)}}{2(1)} = \frac{-4 \pm \sqrt{80}}{2} = \frac{-4 \pm \sqrt{16}\sqrt{5}}{2} = \frac{-4 \pm 4\sqrt{5}}{2} = -2 \pm 2\sqrt{5}$$

PTS: 2   REF: 061410a1   NAT: A.REI.4b   TOP: Solving Quadratics
KEY: quadratic formula

61 ANS: 1

$$\frac{-(-6) \pm \sqrt{(-6)^2 - 4(1)(-19)}}{2(1)} = \frac{6 \pm \sqrt{112}}{2} = \frac{6 \pm \sqrt{16} \cdot \sqrt{7}}{2} = \frac{6 \pm 4\sqrt{7}}{2} = 3 \pm 2\sqrt{7}$$

PTS: 2   REF: fall1302a1   NAT: A.REI.4b   TOP: Solving Quadratics
KEY: quadratic formula

62 ANS:

$$\frac{1}{2}x^2 - 4 = 0$$

$$x^2 - 8 = 0$$

$$x^2 = 8$$

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

PTS: 2   REF: fall1306a1   NAT: A.REI.4b   TOP: Solving Quadratics
KEY: taking square roots

63 ANS: 3   PTS: 2   REF: 081409a1   NAT: A.CED.1
TOP: Modeling Quadratics

64 ANS: 4   PTS: 2   REF: spr1304a1   NAT: A.CED.1
TOP: Geometric Applications of Quadratics

65 ANS:

$$w(w + 40) = 6000$$

$$w^2 + 40w - 6000 = 0$$

$$(w + 100)(w - 60) = 0$$

$$w = 60, l = 100$$

PTS: 4　　　REF: 081436a1　　　NAT: A.CED.1　　　TOP: Geometric Applications of Quadratics

66 ANS:

$(2x + 16)(2x + 12) = 396$. The length, $2x + 16$, and the width, $2x + 12$, are multiplied and set equal to the area.

$$(2x + 16)(2x + 12) = 396$$

$$4x^2 + 24x + 32x + 192 = 396$$

$$4x^2 + 56x - 204 = 0$$

$$x^2 + 14x - 51 = 0$$

$$(x + 17)(x - 3) = 0$$

$$x = 3 = \text{width}$$

PTS: 4　　　REF: 061434a1　　　NAT: A.CED.1　　　TOP: Geometric Applications of Quadratics

67 ANS:

$(x - 3)(2x) = 1.25x^2$　Because the original garden is a square, x^2 represents the original area, $x - 3$ represents the side decreased by 3 meters, $2x$ represents the doubled side, and $1.25x^2$ represents the new garden with an area 25% larger.　$(x - 3)(2x) = 1.25x^2$　$1.25(8)^2 = 80$

$$2x^2 - 6x = 1.25x^2$$

$$.75x^2 - 6x = 0$$

$$x^2 - 8x = 0$$

$$x(x - 8) = 0$$

$$x = 8$$

PTS: 6　　　REF: 011537a1　　　NAT: A.CED.1　　　TOP: Geometric Applications of Quadratics

68 ANS: 4　　　PTS: 2　　　REF: 081405a1　　　NAT: A.REI.10
TOP: Graphing Quadratic Functions

69 ANS: 3　　　PTS: 2　　　REF: 061409a1　　　NAT: F.IF.4
TOP: Graphing Quadratic Functions

70 ANS:

The vertex represents a maximum since $a < 0$.　$f(x) = -x^2 + 8x + 9$

$$= -(x^2 - 8x - 9)$$

$$= -(x^2 - 8x + 16) + 9 + 16$$

$$= -(x - 4)^2 + 25$$

PTS: 4　　　REF: 011536a1　　　NAT: F.IF.8a　　　TOP: Graphing Quadratic Functions

71 ANS:

g. The maximum of f is 6. For g, the maximum is 11. $x = \dfrac{-b}{2a} = \dfrac{-4}{2\left(-\dfrac{1}{2}\right)} = \dfrac{-4}{-1} = 4$

$$y = -\frac{1}{2}(4)^2 + 4(4) + 3 = -8 + 16 + 3 = 11$$

PTS: 2   REF: 081429a1   NAT: F.IF.9   TOP: Graphing Quadratic Functions

72 ANS: 2   PTS: 2   REF: 061403a1   NAT: A.APR.1
TOP: Addition and Subtraction of Polynomials   KEY: subtraction

73 ANS: 2

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

PTS: 2   REF: 081406a1   NAT: A.APR.1   TOP: Addition and Subtraction of Polynomials
KEY: subtraction

74 ANS:

$-2x^2 + 6x + 4$

PTS: 2   REF: 011528a1   NAT: A.APR.1   TOP: Addition and Subtraction of Polynomials
KEY: subtraction

75 ANS: 2   PTS: 2   REF: 011510a1   NAT: A.APR.1
TOP: Multiplication of Polynomials

76 ANS:

$$(2x^2 + 7x - 10)(x + 5)$$

$2x^3 + 7x^2 - 10x + 10x^2 + 35x - 50$

$$2x^3 + 17x^2 + 25x - 50$$

PTS: 2   REF: 081428a1   NAT: A.APR.1   TOP: Multiplication of Polynomials

77 ANS: 1   PTS: 2   REF: 081415a1   NAT: A.SSE.2
TOP: Factoring Polynomials

78 ANS: 3   PTS: 2   REF: 011522a1   NAT: A.SSE.2
TOP: Factoring Polynomials

79 ANS:

$$x^4 + 6x^2 - 7$$

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

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

PTS: 2   REF: 061431a1   NAT: A.SSE.2   TOP: Factoring Polynomials

80 ANS: 3   PTS: 2   REF: spr1302a1   NAT: A.APR.3
TOP: Zeros of Polynomials

81 ANS: 1   PTS: 2   REF: 011524a1   NAT: A.APR.3
TOP: Zeros of Polynomials

82 ANS: 2

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

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

PTS: 2   REF: spr1303a1   NAT: A.APR.3   TOP: Zeros of Polynomials

83 ANS: 4

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

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

$$x = -7, 3$$

PTS: 2   REF: 081418a1   NAT: F.IF.8a   TOP: Zeros of Polynomials

84 ANS: 1

$25,000(0.86)^2 - 25,000(0.86)^3 = 18490 - 15901.40 = 2588.60$

PTS: 2   REF: 011508a1   NAT: F.IF.8b   TOP: Evaluating Exponential Expressions

85 ANS: 4   PTS: 2   REF: 061406a1   NAT: F.LE.1c
    TOP: Modeling Exponential Equations

86 ANS: 1   PTS: 2   REF: 011504a1   NAT: F.BF.1a
    TOP: Modeling Exponential Equations

87 ANS:

$B = 3000(1.042)^t$

PTS: 2   REF: 081426a1   NAT: F.BF.1a   TOP: Modeling Exponential Equations

88 ANS: 3   PTS: 2   REF: 061415a1   NAT: F.LE.2
    TOP: Modeling Exponential Equations

89 ANS:

$y = 0.25(2)^x$. I inputted the four integral values from the graph into my graphing calculator and determined the exponental regression equation.

PTS: 2   REF: 011532a1   NAT: F.LE.2   TOP: Modeling Exponential Equations

90 ANS: 3   PTS: 2   REF: 011515a1   NAT: F.IF.8b
    TOP: Modeling Exponential Equations

91 ANS:

0.5 represents the rate of decay and 300 represents the initial amount of the compound.

PTS: 2   REF: 061426a1   NAT: F.LE.5   TOP: Modeling Exponential Equations

92 ANS: 4

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

$16^2 = n^4$

$256 = n^4$

$4 = n$

PTS: 2   REF: 011519a1   NAT: A.SSE.3c   TOP: Solving Exponential Equations

93 ANS:
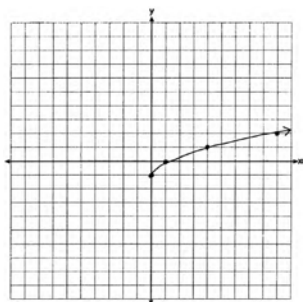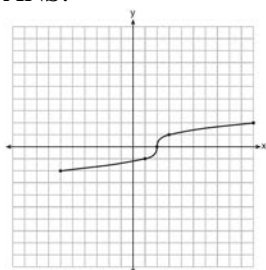

PTS: 2   REF: 061425a1   NAT: F.IF.7b   TOP: Graphing Root Functions

94 ANS:

PTS: 2   REF: fall1304a1   NAT: F.IF.7b   TOP: Graphing Root Functions

95 ANS: 1   PTS: 2   REF: 061420a1   NAT: F.IF.2
TOP: Functional Notation

96 ANS:

$(-4, 1)$, because then every element of the domain is not assigned one unique element in the range.

PTS: 2   REF: 011527a1   NAT: F.IF.1   TOP: Defining Functions

97 ANS:

Yes, because every element of the domain is assigned one unique element in the range.

PTS: 2   REF: 061430a1   NAT: F.IF.1   TOP: Defining Functions

98 ANS: 4   PTS: 2   REF: 061417a1   NAT: F.IF.2
TOP: Domain and Range

99 ANS: 1

$f(2) = 0$

$f(6) = 8$

PTS: 2   REF: 081411a1   NAT: F.IF.2   TOP: Domain and Range

100 ANS: 2

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

$$16t^2 = 144$$

$$t^2 = 9$$

$$t = 3$$

PTS: 2   REF: 081423a1   NAT: F.IF.5   TOP: Domain and Range

101 ANS: 4
There are no negative or fractional cars.

PTS: 2   REF: 061402a1   NAT: F.IF.5   TOP: Domain and Range
102 ANS: 2   PTS: 2   REF: 011506a1   NAT: F.IF.5
TOP: Domain and Range
103 ANS: 3   PTS: 2   REF: 011505a1   NAT: F.LE.1b
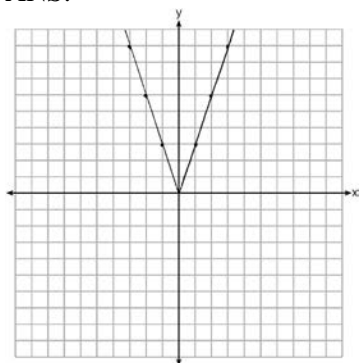TOP: Families of Functions
104 ANS: 3   PTS: 2   REF: 081412a1   NAT: F.LE.1b
TOP: Families of Functions
105 ANS: 3   PTS: 2   REF: 081410a1   NAT: F.LE.2
TOP: Families of Functions
106 ANS:

2 down. 4 right.

PTS: 4   REF: 081433a1   NAT: F.BF.3
TOP: Transformations with Functions and Relations
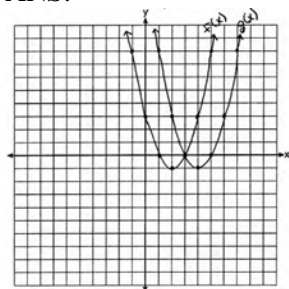107 ANS: 1   PTS: 2   REF: 081417a1   NAT: F.BF.3
TOP: Transformations with Functions and Relations
108 ANS: 2   PTS: 2   REF: 011512a1   NAT: F.BF.3
TOP: Transformations with Functions and Relations
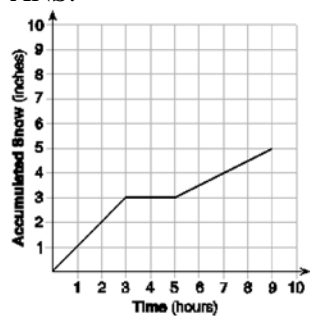109 ANS:

$(4, -1)$. $f(x - 2)$ is a horizontal shift two units to the right.

PTS: 2   REF: 061428a1   NAT: F.BF.3
TOP: Transformations with Functions and Relations

110 ANS:

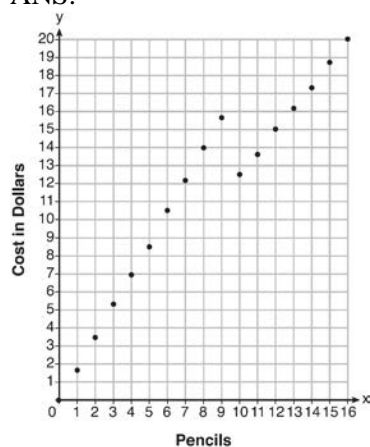At 6 hours, $3\frac{1}{2}$ inches of snow have fallen.

PTS: 4   REF: spr1307a1   NAT: F.IF.4   TOP: Relating Graphs to Events

111 ANS:

Since according to the graph, 8 pencils cost $14 and 10 pencils cost $12.50, the cashier is correct.
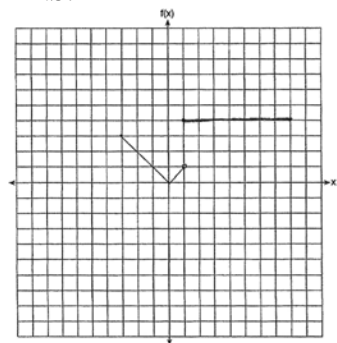
PTS: 4   REF: fall1312a1   NAT: F.IF.7b   TOP: Graphing Piecewise-Defined Functions

112 ANS:

PTS: 2   REF: 011530a1   NAT: F.IF.7b   TOP: Graphing Piecewise-Defined Functions
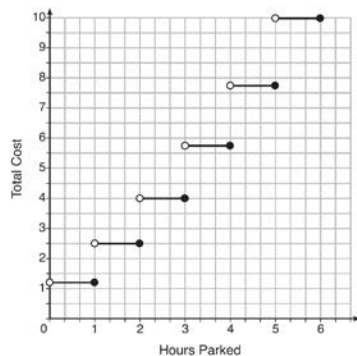
113 ANS: 2   PTS: 2   REF: 081422a1   NAT: F.IF.7b
TOP: Graphing Piecewise-Defined Functions

114 ANS:

The cost for each additional hour increases after the first 2 hours.

PTS: 4   REF: fall1311a1   NAT: F.IF.7b   TOP: Graphing Step Functions

115 ANS: 4

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

PTS: 2   REF: 081424a1   NAT: F.IF.3   TOP: Sequences

116 ANS: 3

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

$f(1 + 1) = -2f(1) + 3 = -2(-1) + 3 = 5$

PTS: 2   REF: 011520a1   NAT: F.IF.3   TOP: Sequences

117 ANS: 4   PTS: 2   REF: 061421a1   NAT: F.IF.3
    TOP: Sequences

118 ANS: 2   PTS: 2   REF: 061424a1   NAT: F.LE.2
    TOP: Sequences

119 ANS: 2   PTS: 2   REF: 081416a1   NAT: F.LE.2
    TOP: Sequences

120 ANS: 2

$2(3x - y = 4)$

$6x - 2y = 8$

PTS: 2   REF: 061414a1   NAT: A.REI.5   TOP: Solving Linear Systems

121 ANS:

$185 + 0.03x = 275 + 0.025x$

$0.005x = 90$

$x = 18000$

PTS: 2   REF: 081427a1   NAT: A.REI.6   TOP: Solving Linear Systems

122 ANS: 4   PTS: 2   REF: 081419a1   NAT: A.CED.2
    TOP: Modeling Linear Systems

16

123 ANS:

$2p + 3d = 18.25$ $4p + 6d = 36.50$ $4p + 2(2.25) = 27.50$

$4p + 2d = 27.50$ $4p + 2d = 27.50$ $4p = 23$

                $4d = 9$ $p = 5.75$

                 $d = 2.25$

PTS: 2   REF: 011533a1   NAT: A.CED.2   TOP: Modeling Linear Systems

124 ANS:
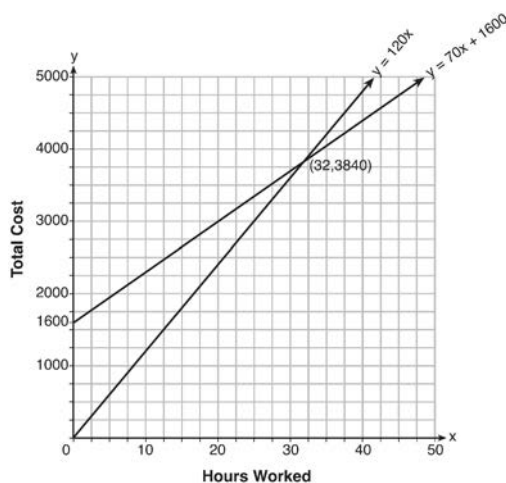
a) $A(x) = 1.50x + 6$ b) $1.50x + 6 = 2x + 2.50$ c) $A(x) = 1.50(5) + 6 = 13.50$ Carnival B has a lower cost.

   $B(x) = 2x + 2.50$ $.50x = 3.50$ $B(x) = 2(5) + 2.50 = 12.50$

                $x = 7$

PTS: 6   REF: spr1308a1   NAT: A.REI.6   TOP: Modeling Linear Systems

125 ANS:

$y = 120x$ and $y = 70x + 1600$ $120x = 70x + 1600$

                         $50x = 1600$

                          $x = 32$

$y = 120(35) = 4200$ Green Thumb is less expensive.

$y = 70(35) + 1600 = 4050$

PTS: 6   REF: fall1315a1   NAT: A.REI.6   TOP: Modeling Linear Systems

126 ANS:

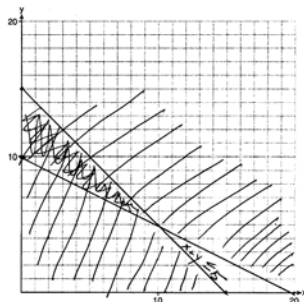a) $p + d \le 800$ b) $6(440) + 9d \ge 5000$ Since $440 + 263 \le 800$, it is possible.

   $6p + 9d \ge 5000$ $2640 + 9d \ge 5000$

                $9d \ge 2360$

                $d \ge 262.\overline{2}$

PTS: 2   REF: spr1306a1   NAT: A.CED.3   TOP: Modeling Systems of Linear Inequalities

127 ANS:

$x + y \le 15$ Zero hours at school and 15 hours at the library.

$4x + 8y \ge 80$

PTS: 6   REF: 081437a1   NAT: A.CED.3   TOP: Modeling Systems of Linear Inequalities

128 ANS: 2   PTS: 2   REF: 061404a1   NAT: A.REI.12
TOP: Graphing Systems of Linear Inequalities

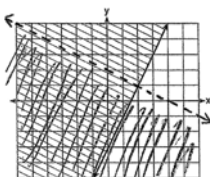129 ANS: 1   PTS: 2   REF: 081407a1   NAT: A.REI.12
TOP: Graphing Systems of Linear Inequalities

130 ANS: 2

$(4, 3)$ is on the boundary of $y > -\dfrac{1}{2} x + 5$, so $(4, 3)$ is not a solution of the system.

PTS: 2   REF: fall1301a1   NAT: A.REI.12   TOP: Graphing Systems of Linear Inequalities
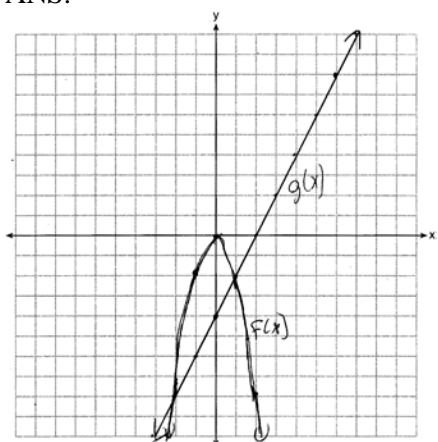
131 ANS:

$y \ge 2x - 3$.   Oscar is wrong. $(2) + 2(1) < 4$ is not true.

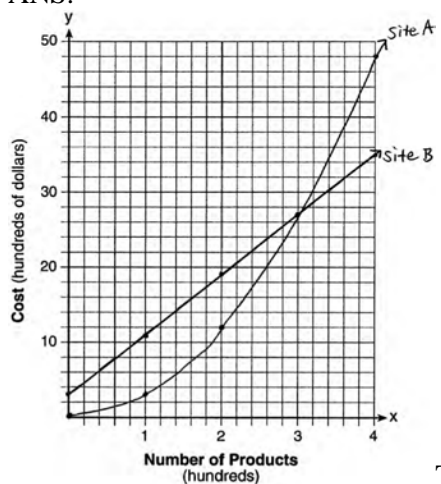PTS: 4   REF: 011534a1   NAT: A.REI.12   TOP: Graphing Systems of Linear Inequalities

132 ANS:

$x = -2, 1$

PTS: 4   REF: 081435a1   NAT: A.REI.7   TOP: Quadratic-Linear Systems

18

133 ANS:

The graphs of the production costs intersect at $x = 3$. The company should use Site A, because the cost of Site A is lower at $x = 2$.

PTS: 6   REF: 061437a1   NAT: A.REI.7   TOP: Quadratic-Linear Systems
134 ANS: 3   PTS: 2   REF: 011518a1   NAT: A.REI.11
    TOP: Nonlinear Systems