STAAR®

## State of Texas Assessments of Academic Readiness

Algebra I

Administered May 2013

RELEASED

DIRECTIONS
Read each question carefully. For a multiple-choice question, determine the best answer to the question from the four answer choices provided. For a griddable question, determine the best answer to the question. Then fill in the answer on your answer document.

1 A dentist made the scatterplot below to show the number of cavities her patients had as it relates to the number of times they flossed their teeth each week.

Cavities and Flossing
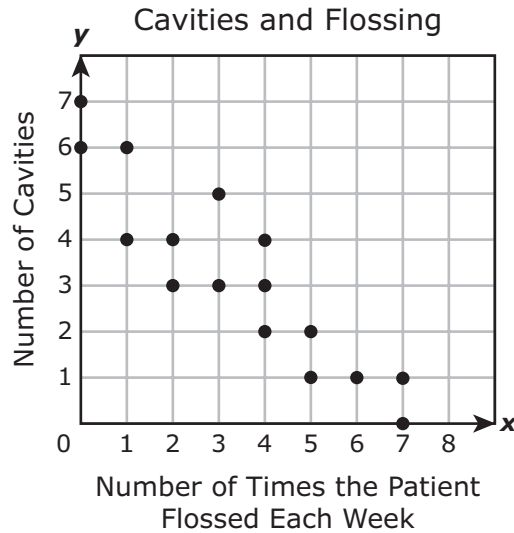
Which of the following best describes the correlation for the data?

A Positive correlation

C Negative correlation

B Nonlinear correlation

D No correlation

---

2 What is the vertex of the graph of the quadratic function $f(x) = x^2 + 6x + 10$?

F $(3, -1)$

G $(-3, -1)$

H $(-3, 1)$

J $(3, 1)$

Page 9

GO ON

3   Which of the following graphs best represents a system of equations that has no solution?

A

B

C

D
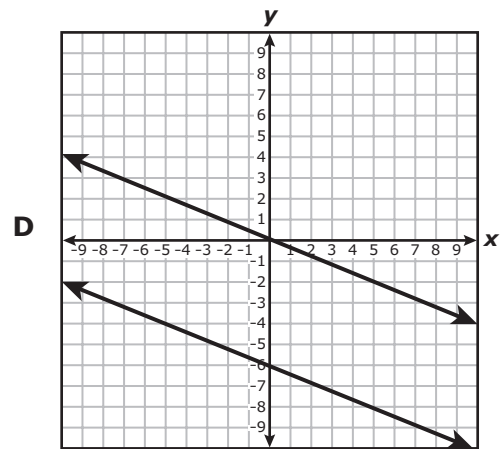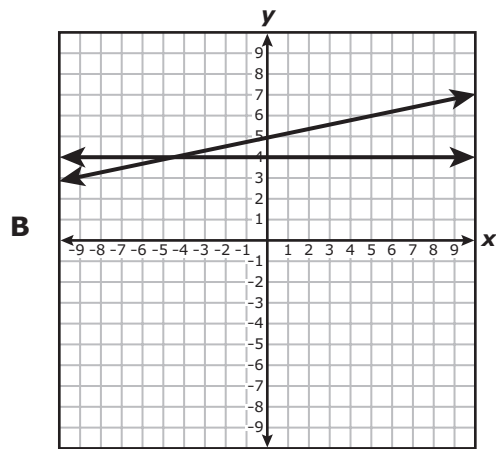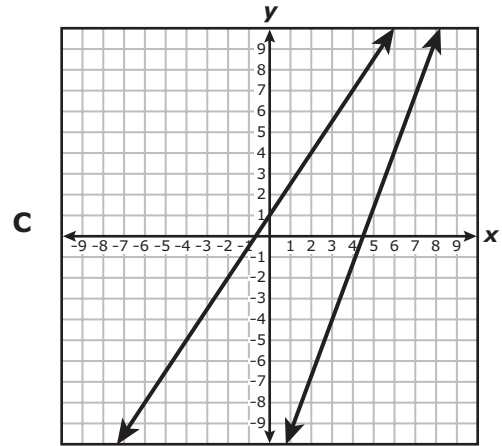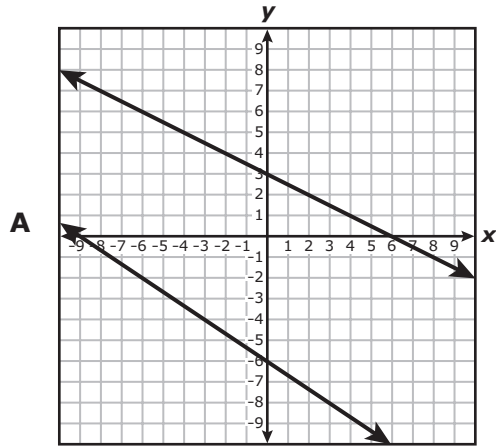
4 A family will travel 350 miles from their house in order to reach Dallas, TX. Which inequality can be used to find all possible values of t, the time it will take this family to reach Dallas in hours, if they travel at an average speed of at least r miles per hour?

F $t \leq 350r$

G $t > \dfrac{r}{350}$

H $t \leq \dfrac{350}{r}$

J $t > 350r^2$

---

5 The graph below shows the relationship between the number of dollars a worker earns and the number of hours worked.

Worker's Earnings
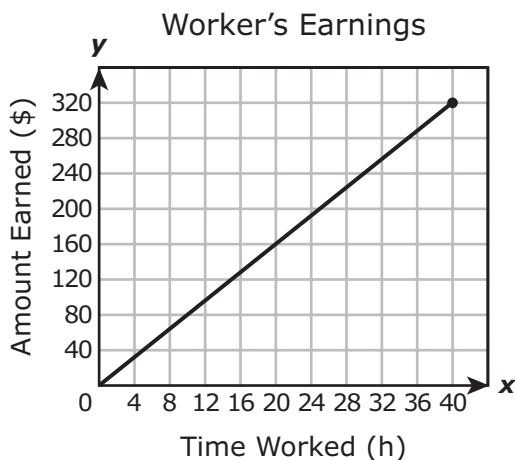
What does the slope of the graph represent?

A The number of hours of work it takes to earn $320

B The amount of money earned per hour

C The amount earned for 40 hours of work

D The number of hours worked per dollar earned

6 The perimeter of a rectangle is 42 centimeters. The length of the rectangle can be represented by $(x + 4)$, and its width can be represented by $(2x - 7)$. What are the dimensions of this rectangle in centimeters?

  F Length = 10 and width = 11

  G Length = 8 and width = 13

  H Length = 6 and width = 15

  J Length = 12 and width = 9

7   A graph is shown below.
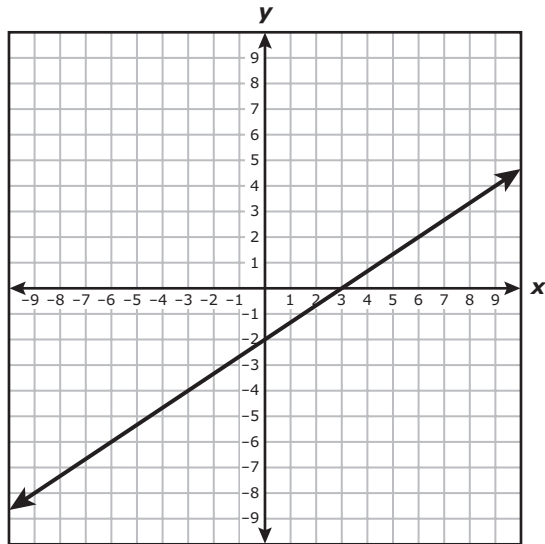
Which of the following equations are represented by the graph?

I. $y = -\dfrac{3}{2}x - 2$

II. $2x - 3y = 6$

III. $y = (x - 2)(x - 3)$

IV. $y - 2 = \dfrac{2}{3}(x - 6)$

A   II and IV

B   I and III

C   II and III

D   I and IV

8   Which table shows the same relationship as $y = -x^2 + 3x$?

F

x	−2	−1	0	1	2
y	−2	−2	0	4	10

G

x	−2	−1	0	1	2
y	−2	−1	0	1	2

H

x	−2	−1	0	1	2
y	−10	−4	0	2	2

J

x	−2	−1	0	1	2
y	−10	−4	0	4	10

---

9   In which step below does a mistake first appear in simplifying the expression
$0.5(-12c + 6) - 3(c + 4) + 10(c - 5)$?

Step 1: $-6c + 3 - 3(c + 4) + 10(c - 5)$
Step 2: $-6c + 3 - 3c - 12 + 10(c - 5)$
Step 3: $-6c + 3 - 3c - 12 + 10c - 50$
Step 4: $7c - 41$

A   Step 1

B   Step 2

C   Step 3

D   Step 4

10 The value of *y* varies directly with *x*. Which function represents the relationship between *x* and *y* if $y = \dfrac{20}{3}$ when $x = 30$?

F $y = 200x$

G $y = \dfrac{2}{9}x$

H $y = \dfrac{110}{3}x$

J $y = \dfrac{9}{2}x$

---

11 A table of values for the exponential function *f* is shown below.

x	f(x)
1	140,000
2	143,850
3	147,806
4	151,871
5	156,047

Which situation could describe this function?

A The value of a house increases by approximately $2\dfrac{3}{4}$% per year.

B The value of a house increases by $3,850 per year.

C The value of a house decreases by approximately $2\dfrac{3}{4}$% per year.

D The value of a house decreases by $3,850 per year.

12 There are 9 books stacked on a shelf. The thickness of each book is either 1 inch or 2 inches. The height of the stack of 9 books is 14 inches. Which system of equations can be used to determine x, the number of 1-inch-thick books in the stack, and y, the number of 2-inch-thick books?
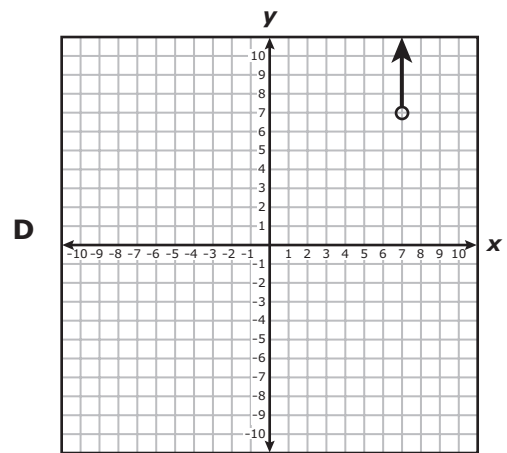
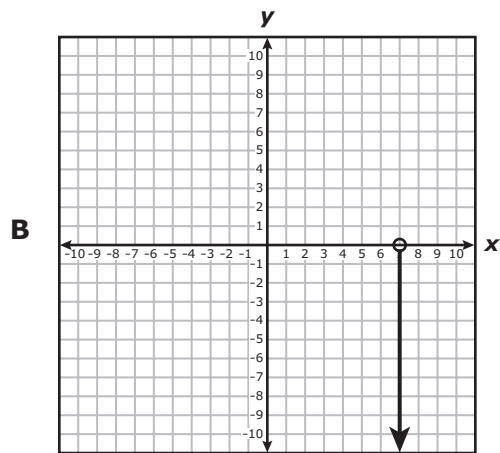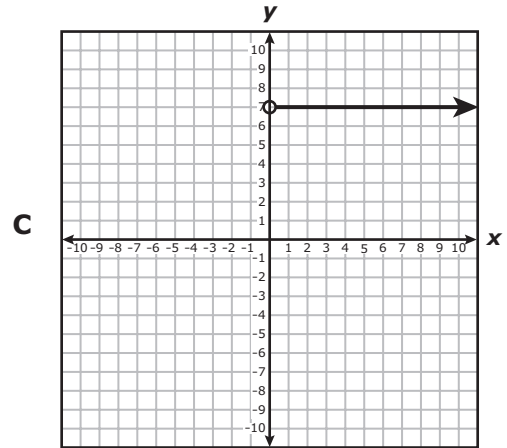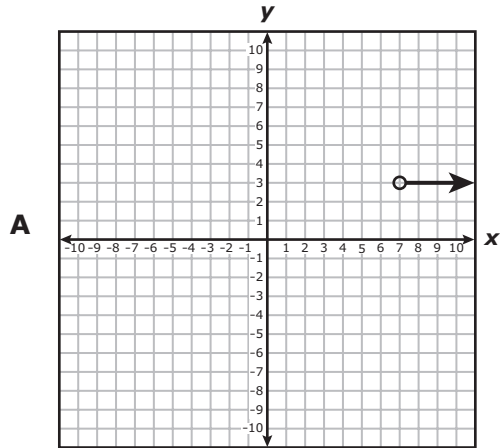**F** $x + y = 14$
$2x + y = 9$

G $x + y = 14$
$x + 2y = 9$

H $x + y = 9$
$x + 2y = 14$

J $x + y = 9$
$2x + y = 14$

13   Which graph shows a function with a domain of all real numbers greater than 7?

A

C

B

D

14 Students at a school will sell hats to raise money. There are some hats left over from last year, and 20 boxes of hats will be ordered this year. When the order arrives, the total number of hats the students will have can be determined using the function $f(x) = 48x + 37$, where x represents the number of boxes ordered. If the number of hats per box changes so that the situation is modeled by the function $h(x) = 24x + 37$, then how many fewer hats will the students have available to sell if they still order 20 boxes?

Record your answer and fill in the bubbles on your answer document.

15 What is the solution set for the quadratic equation $x^2 - 16 = 0$?

 A {4}

 B {−4, 4}

 C {256}

 D {−256, 256}

16 A painter charges $35 per hour for labor plus $40 for a ladder rental when he paints a house. The customer provides the paint. The total charge to paint a customer's house was $950. How many hours did the painter spend painting this house?

F $12\frac{2}{3}$ h

G 28 h

H 23 h

J Not here

17 The slope and *y*-intercept of the graph of *f* were changed to make the graph of *g*, as shown below.
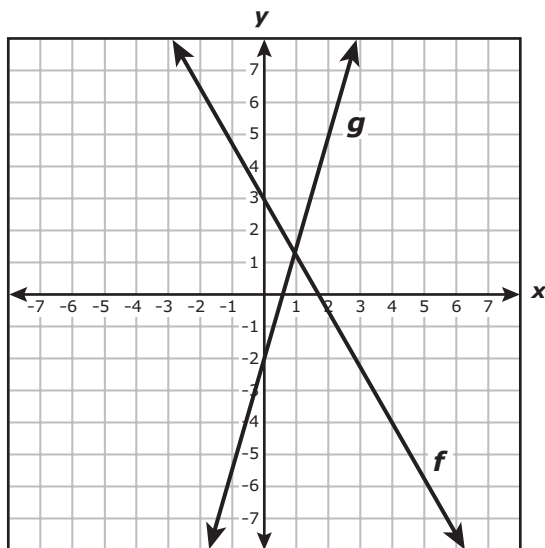
Which statement describes the changes that were made to the graph of *f* to make the graph of *g*?

A The slope was multiplied by 2, and the *y*-intercept was decreased by 5 to make the graph of *g*.

B The slope was multiplied by $-\dfrac{1}{2}$, and the *y*-intercept was increased by 5 to make the graph of *g*.

C The slope was multiplied by −2, and the *y*-intercept was decreased by 5 to make the graph of *g*.

D The slope was multiplied by $\dfrac{1}{2}$, and the *y*-intercept was increased by 5 to make the graph of *g*.

18 The population of a town is currently 9,000. The function $p = 9,000 + 8t^2$ can be used to estimate p, the population of the town t years from now. Based on this function, which statement is true?

F The population of the town is increasing at a constant rate.

G The population of the town will reach 10,000 between 11 and 12 years from now.

H The population of the town will increase by 256 people two years from now.

J The population of the town will increase and then decrease.

---

19 The graph of $y = 3x^2 - 2$ is shown below.
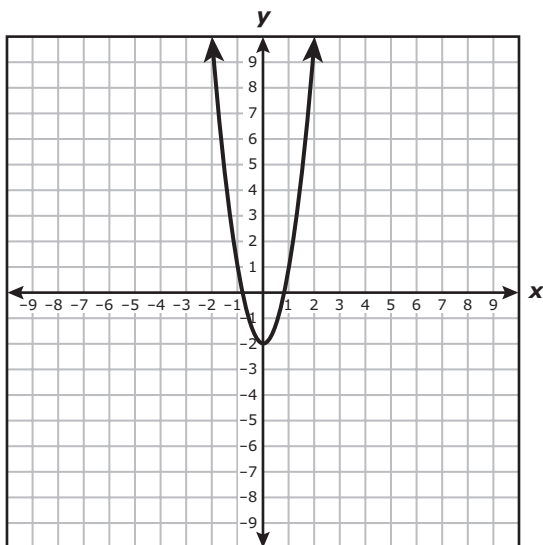
If the coefficient of x^2 is changed from 3 to another positive number to create a new function, how will the graph of the new function compare with the graph of the original function?

A The x-intercepts of the new graph will be the same as the x-intercepts of the original graph.

B The vertex of the new graph will be different from the vertex of the original graph.

C The new graph will be wider or narrower than the original graph.

D The new graph will open in the opposite direction as the original graph.

GO ON

20 For the function w, $w(9) = -7$, and $w(-7) = 9$. If $y = w(x)$, what is the value of y when $x = -7$?

Record your answer and fill in the bubbles on your answer document.

---

21 The late fee for overdue books at a library is $0.25 per day per book, with a maximum late fee of $5.00 per book. Which graph models the total late fee for 3 books that were checked out on the same day and are overdue?

A

Fees for Overdue Books

Late Fee ($) vs Days Overdue

C

Fees for Overdue Books

Late Fee ($) vs Days Overdue

B

Fees for Overdue Books

Late Fee ($) vs Days Overdue

D

Fees for Overdue Books

Late Fee ($) vs Days Overdue
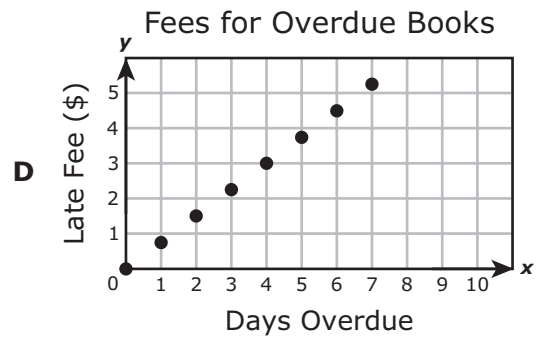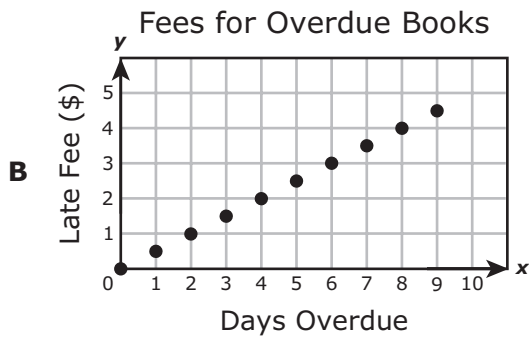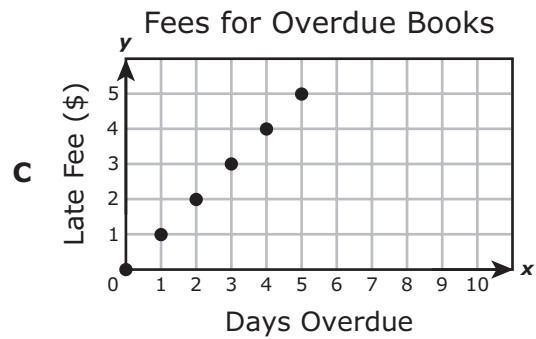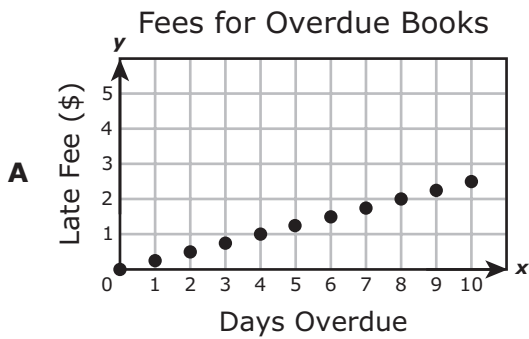
22 Which inequality is equivalent to $7x - 2y > 8$?

F $y > \dfrac{7}{2}x + 8$

G $y > -\dfrac{2}{7}x + \dfrac{8}{7}$

H $y < \dfrac{7}{2}x - 4$

J $y < -\dfrac{2}{7}x - \dfrac{4}{7}$

---

23 The sophomore class needs a combined total of 216 medium and large T-shirts for field day. The number of medium T-shirts needed is three times the number of large T-shirts needed. Based on this information, would it be reasonable for the sophomore class to order 72 large T-shirts and 144 medium T-shirts?

A No, because the number of medium T-shirts is not 3 times the number of large T-shirts

B No, because the number of large T-shirts is not 3 times the number of medium T-shirts

C Yes, because the total number of T-shirts is 216

D Yes, because the number of large T-shirts is $\dfrac{1}{3}$ of the total number of T-shirts

GO ON

24 An airplane's altitude in feet during its descent for landing can be found using the function $f(x) = -300x + 30{,}000$, where x represents the horizontal distance in miles from where the plane begins its descent. After new government regulations become law, the airplane's descent will be modeled by the function $g(x) = -300x + 30{,}500$. Which statement describes this change?

F The airplane starts its descent from an altitude 500 feet higher.

G The airplane starts its descent from an altitude 500 feet lower.

H The airplane descends 500 feet per horizontal mile faster.

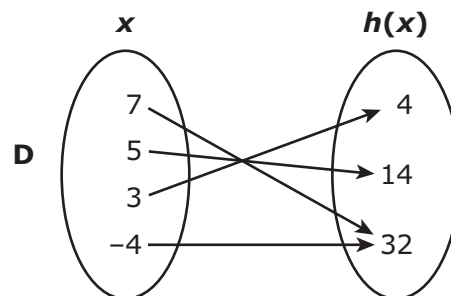**J** The airplane descends 500 feet per horizontal mile slower.

---

25 The graph of the quadratic function h passes through the points $(-4, 32)$, $(3, 4)$, $(5, 14)$, and $(7, 32)$. Which of the following shows the same relationship as h?

A
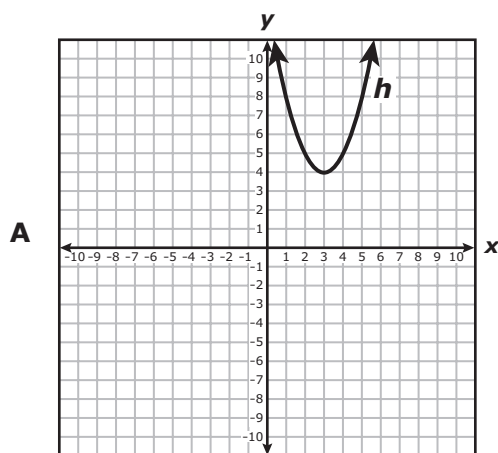
C

x	$h(x)$
32	−4
4	3
14	5
32	7

B $h(x) = x^2 + 3x + 4$

D

26 What is the value of x in the solution to the system of equations below?

$$6x + 3y = 13$$
$$3x - y = 4$$

F 1

G $\dfrac{5}{3}$

H $\dfrac{8}{3}$

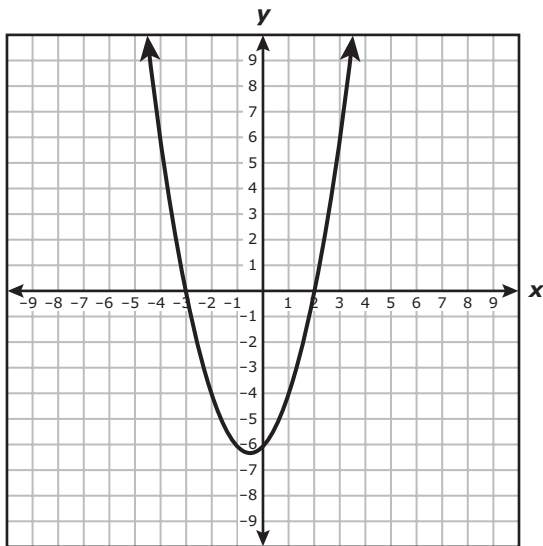**J** $\dfrac{7}{3}$

---

27 What is the zero of the linear function graphed below?

(0, 5)

(2, −5)
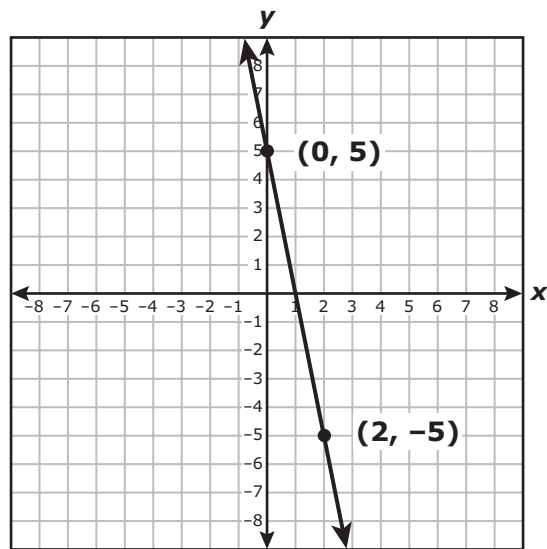
Record your answer and fill in the bubbles on your answer document.

28 The function $y = x^2 + x - 6$ is graphed below.

What are the values of x when $x^2 + x - 6 = -4$?

F $x = -4$ and $x = 6$

G $x = -2$ and $x = 1$

H $x = -3$ and $x = 2$

J $x = -5$ and $x = -6$

29 A store manager begins each shift with the same total amount of money. She keeps $200 in a safe and distributes the rest equally to the 5 cashiers in the store. This situation can be represented by the function $y = \dfrac{(x - 200)}{5}$. What does the variable x represent in this situation?

A The total amount of money the manager has at the beginning of a shift

B The total amount of money the manager has at the end of a shift

C The amount of money each cashier has at the beginning of a shift

D The amount of money each cashier has at the end of a shift

---

30 What is the equation in standard form of the line that passes through the point (1, 24) and has a slope of -0.6?

F $3x + 5y = 125$

G $3x + 5y = 77$

H $3x + 5y = 123$

J $3x + 5y = 115$

GO ON

31 Which coordinate pair is in the solution set for $y < 1 - 6x$?
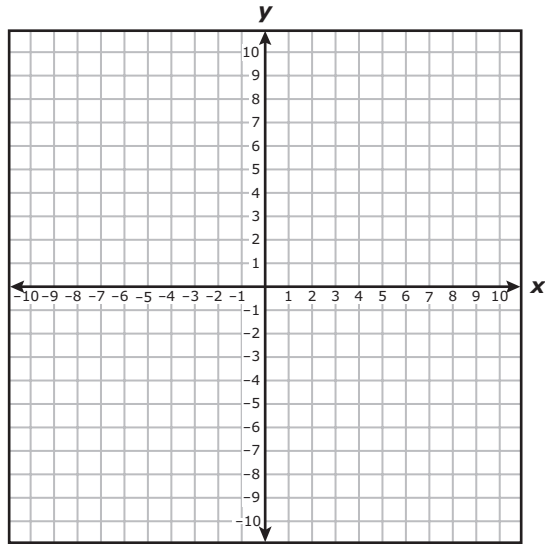
A (1, 0)

B (1, −1)

C (0, 1)

D (−1, 1)

32 Which graph does not represent y as a function of x?

F

H

G

J

---
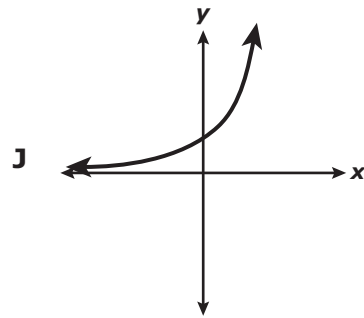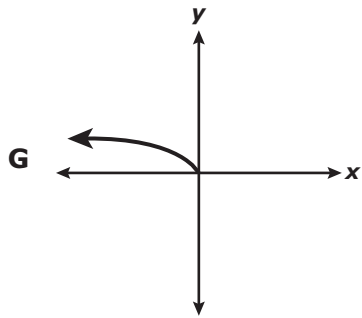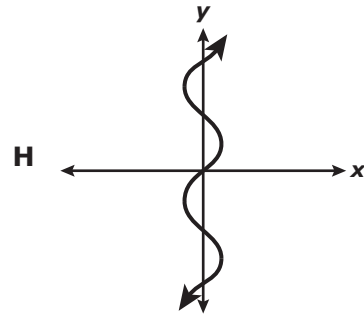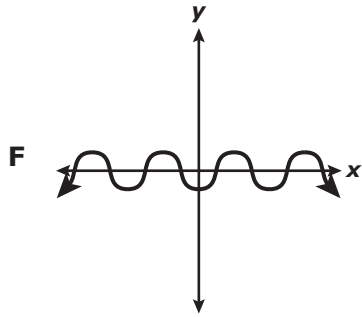
33 The graph of line p represents $y = \dfrac{1}{5}x - 1$. If the slope of line p is multiplied by -10 to create line r, which statement about the graphs of the two lines is true?

A Line r intersects line p.

B Line r is parallel to line p.

C Line r is 10 units above line p.

D Line r is 10 units below line p.

34 A table of values for the quadratic function f is shown below.

x	f(x)
−8	−2.75
−7	0
−6	2.25
−5	4
−4	5.25
−3	6
−2	6.25
−1	6
0	5.25
1	4

If 3 is one solution to $f(x) = 0$, what is the value of the other solution?

Record your answer and fill in the bubbles on your answer document.

---

35 A print shop charges a fixed amount per photocopy and gives a 10% discount off the total cost of the photocopies. The total cost is a function of the number of photocopies made. What is the independent quantity in this situation?

A The total cost of the photocopies

B The price per photocopy

C The amount of the discount

D The total number of photocopies made

36 The set of ordered pairs below represents some points on the graph of function *f*.

$$\{(3, 11), (-1, 3), (5, 15), (-4, -3), (-7, -9)\}$$

What is the parent function of *f*?

F $y = x$

G $y = 2^x$

H $y = x^2$

J $y = \sqrt{x}$

---

37 The average annual rainfall for a particular city is 33.2 inches. In the first 30 weeks of this year, the city received a total of 9.7 inches of rain. If it is expected to rain between 1.5 and 2.1 inches per week through the end of the year, what is a reasonable number of additional weeks needed for this city to reach its average annual rainfall?

A   23 weeks

B   13 weeks

C   9 weeks

D   16 weeks

38 A teacher collected data on 20 students for two different quizzes. The scatterplot below shows the relationship between the number of points scored on Quiz 1 and the number of points scored on Quiz 2.

Quiz Scores
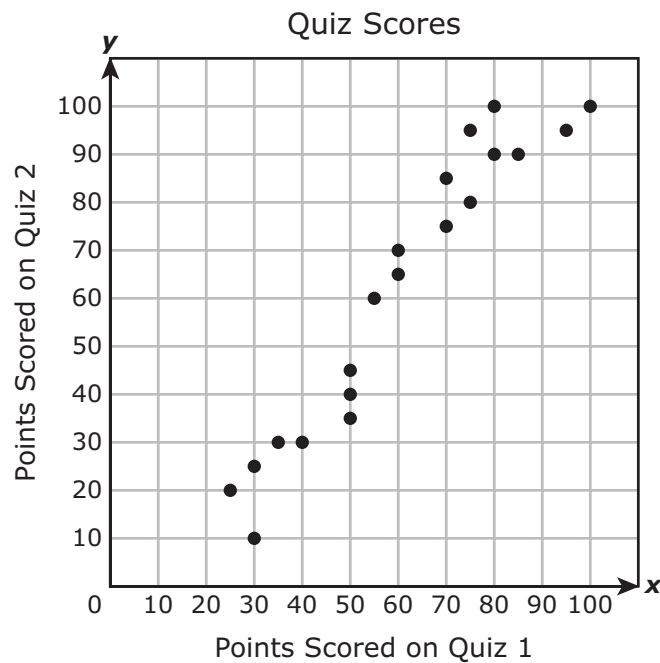
Which statement describes the data?

F The number of points scored on Quiz 2 was less than the number of points scored on Quiz 1 for any student who scored at least 50 points on Quiz 1.

G The number of points scored on Quiz 2 was greater than the number of points scored on Quiz 1 for any student who scored 50 or fewer points on Quiz 1.

H The number of points scored on Quiz 2 was greater than the number of points scored on Quiz 1 for any student who scored at least 50 points on Quiz 1.

J The number of points scored on Quiz 2 was less than the number of points scored on Quiz 1 for any student who scored 50 or fewer points on Quiz 1.

GO ON

39 The number of ferryboat trips, $f(c)$, needed to transport c cars in 1 day can be found using the function $f(c) = \dfrac{c}{20}$. If there are no more than 5,000 cars transported by ferryboat daily, what is the range of the function for this situation?
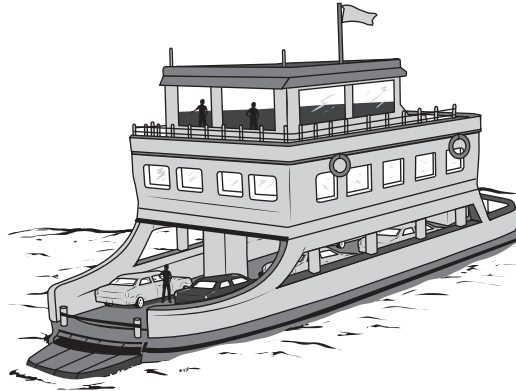
A The set of all integers greater than or equal to 5,000

B The set of all integers from 0 to 5,000

C The set of all integers greater than or equal to 250

D The set of all integers from 0 to 250

---

40 A high school band held a bake sale. The number of cupcakes sold was four more than twice the number of cookies sold. The band sold a total of 52 cupcakes and cookies. How many cupcakes were sold?

F 28

G 16

H 36

J 24

41 Two points on the graph of a quadratic function are shown on the grid below.
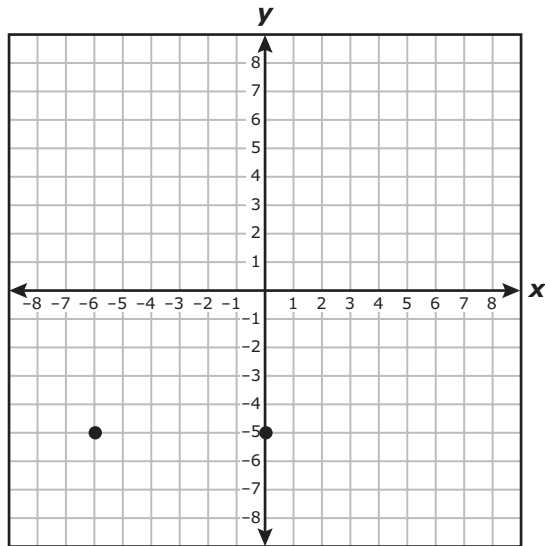
What is the equation for the axis of symmetry of the graph of this function?

A $x = -3$

B $y = -3$

C $x = -5$

D $y = -5$

42 The dishwasher at a restaurant is loaded with the same number of dishes every time it is used. The table below shows the total number of dishes washed as a function of the number of times the dishwasher is used.

Restaurant Dishwasher

Number of Times Used	Total Number of Dishes Washed
2	52
4	104
6	156
8	208

Based on the data in the table, what is the total number of dishes that will have been washed when the dishwasher is used 9 times?

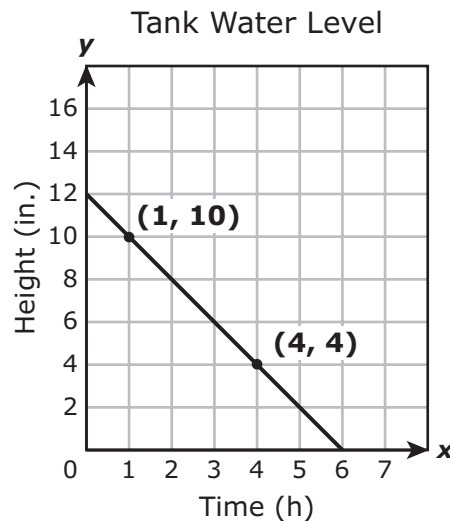Record your answer and fill in the bubbles on your answer document.

43 The first six numbers in a pattern are shown below.

$$\frac{1}{3}, \ \frac{4}{3}, \ 3, \ \frac{16}{3}, \ \frac{25}{3}, \ 12, \ . \ . \ .$$

If the pattern continues, which expression can be used to find the nth number in the pattern?

A $\dfrac{2n}{3}$

B $\dfrac{n^2}{3}$

C $\dfrac{n^2}{6}$

D $\dfrac{2n}{6}$

GO ON

44 The graph below shows the water level in a tank being drained at a constant rate.

Tank Water Level

If the rate at which the tank is drained is changed to 3 inches per hour and the initial water level stays the same, how would the time it takes to empty the tank be affected?

F It would take 4 fewer hours.

G It would take 1.5 more hours.

H It would take 2 fewer hours.

J It would take 2 more hours.

---

45 An architect is designing an office building with n floors that will have an FM radio antenna 15.85 m tall on its roof. Each floor of the building will be 3.9 m high. Which function can be used to find the total height of the building in meters, including the FM antenna?

A $h(n) = 15.85n + 3.9$

B $h(n) = 3.9n + 15.85$

C $h(n) = 3.9n - 15.85$

D $h(n) = 19.75n$

46 What are the *x*-intercepts of the graph of the quadratic function $f(x) = 5x^2 + 4x - 1$?

F $\dfrac{1}{5}$ and -1

G $-\dfrac{1}{5}$ and 1

H 0 and -1

J $-\dfrac{2}{5}$ and $1\dfrac{2}{5}$

---

47 A weightlifter is adding plates of equal weight to a bar. The table below shows the total weight, including the bar, that he will lift depending on the total number of plates on the bar.
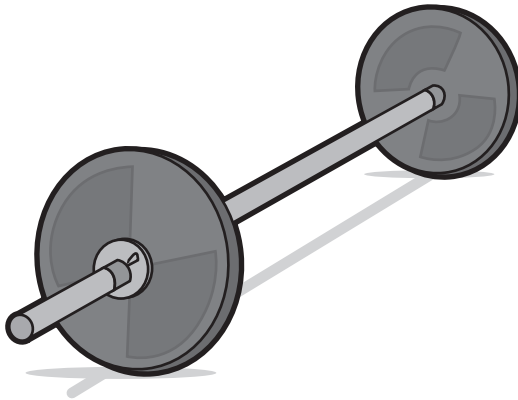
Number of Plates	Total Weight (lb)
2	115
4	185
6	255
8	325

Based on this information, which statement is true?

A The bar weighs 35 lb without any plates.

B The bar weighs 70 lb without any plates.

C The bar weighs 45 lb without any plates.

D The bar weighs 25 lb without any plates.

48 What is the range of the function shown below?
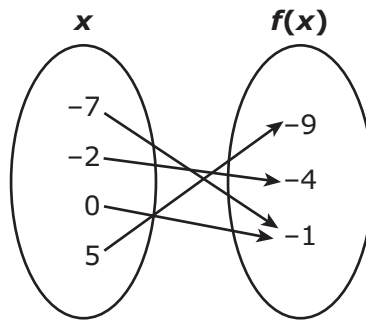
F {−7, −2, 0, 5}

G {−9, −4, −1}

H {−9, −7, −4, −2, −1, 0, 5}

J {−1}

---

49 Which set of ordered pairs contains only points that are on the graph of the function $y = 12 - 3x$?

A {(−3, −27), (0, 0), (6, 54)}

B {(−18, 10), (−6, 6), (18, −2)}

C {(−5, 27), (−1, 15), (8, −12)}

D {(−7, −9), (−4, 0), (2, 18)}

50 Which inequality can be represented by the graph below?
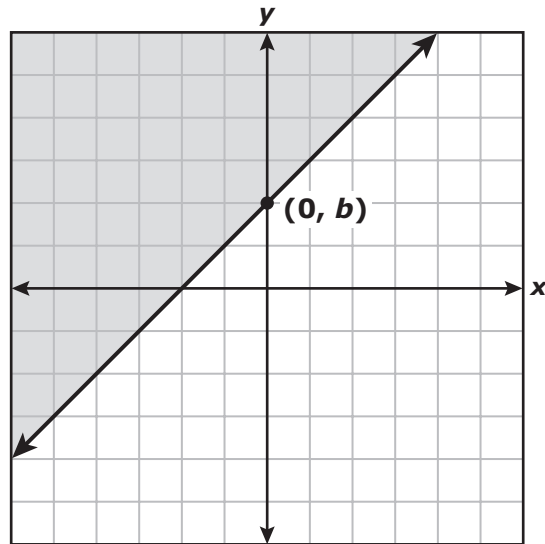
F $y \geq x + b$

G $x - y \geq -b$

H $x + y \leq b$

J $-y \leq x + b$

---

51 Which expression is equivalent to $\dfrac{12x^6 y^{-4} z^2}{3x^2 y^{-6} z^3}$?

A $\dfrac{9x^8 z^5}{y^{-10}}$

B $\dfrac{4x^8 z^5}{y^{-10}}$

C $\dfrac{9x^4 y^2}{z}$

D $\dfrac{4x^4 y^2}{z}$

52 If $y = -\dfrac{4}{5}x - 2$, what is the value of x when $y = -9$?

    F $-\dfrac{35}{4}$

    G $-\dfrac{55}{4}$

    H $\dfrac{35}{4}$

    J $\dfrac{55}{4}$

---

53 Which expression is equivalent to $-6x^2 - 11x - 4$?

    A $(3x + 7)(3x - 3)$

    B $(-3x + 4)(2x - 1)$

    C $(3x - 7)(3x + 3)$

    D $(-3x - 4)(2x + 1)$

54 If the graph of $y = 9x + 4$ is translated 4 units up, which equation describes the new graph?

   F $y = 9x + 8$

   G $y = 13x + 4$

   H $y = 13x + 8$

   J $y = 4x + 4$

BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS
ON THE ANSWER DOCUMENT.

STOP

Item Number	Reporting Category	Readiness or Supporting	Content Student Expectation	Correct Answer
1	2	Readiness	A.2(D)	C
2	5	Readiness	A.9(D)	H
3	4	Readiness	A.8(B)	D
4	1	Supporting	A.1(C)	H
5	3	Readiness	A.6(B)	B
6	2	Readiness	A.4(A)	J
7	3	Readiness	A.5(C)	A
8	1	Readiness	A.1(D)	H
9	2	Supporting	A.4(B)	D
10	3	Supporting	A.6(G)	G
11	5	Supporting	A.11(C)	A
12	4	Supporting	A.8(A)	H
13	2	Readiness	A.2(B)	A
14	3	Readiness	A.6(F)	480
15	5	Readiness	A.10(A)	B
16	4	Readiness	A.7(B)	J
17	3	Readiness	A.6(C)	C
18	1	Readiness	A.1(E)	G
19	5	Supporting	A.9(B)	C
20	2	Supporting	A.4(C)	9
21	3	Readiness	A.5(C)	D
22	2	Readiness	A.4(A)	H
23	4	Supporting	A.8(C)	A
24	3	Readiness	A.6(F)	F
25	1	Readiness	A.1(D)	D
26	4	Readiness	A.8(B)	G
27	3	Supporting	A.6(E)	1
28	5	Readiness	A.10(A)	G
29	2	Supporting	A.3(A)	A
30	3	Supporting	A.6(D)	H
31	4	Readiness	A.7(B)	D
32	1	Supporting	A.1(B)	H
33	3	Readiness	A.6(C)	A
34	5	Readiness	A.10(A)	-7
35	1	Supporting	A.1(A)	D
36	2	Supporting	A.2(A)	F
37	4	Supporting	A.7(C)	B
38	2	Readiness	A.2(D)	J
39	3	Supporting	A.5(B)	D
40	4	Readiness	A.8(B)	H
41	5	Readiness	A.9(D)	A
42	1	Readiness	A.1(E)	234
43	2	Supporting	A.3(B)	B
44	3	Readiness	A.6(F)	H
45	4	Supporting	A.7(A)	B
46	5	Supporting	A.10(B)	F
47	3	Readiness	A.6(B)	C
48	2	Readiness	A.2(B)	G
49	3	Readiness	A.5(C)	C
50	1	Readiness	A.1(D)	F
51	5	Supporting	A.11(A)	D
52	4	Readiness	A.7(B)	H
53	2	Readiness	A.4(A)	D
54	3	Readiness	A.6(C)	F