

Algebra I STAAR Practice Test B

- 1 At a video store, used videos cost \$5.00 and new videos cost \$12.00. Which equation best describes the number of used, u , and new, n , videos that can be purchased for \$58.00?

- A $5u + 12n = 58$
- B $12u + 5n = 58$
- C $17(u + n) = 58$
- D $41(u + n) = 0$

- 2 What is the y -value of the solution to the system of equations shown below?

$$\begin{aligned} 5x - 2y &= -10 \\ -x + 2y &= 9 \end{aligned}$$

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

- 3 Sean does pet-sitting in the summer. His net profit, p , is represented by the equation $p = 12a - 130$, where a is the number of pets he watches. Which is the best interpretation of this information?

- A Sean made a profit of \$130.
- B Sean earns \$12 dollars for each pet he watches and initially invested \$130.
- C Sean earns \$130 for each pet he watches.
- D Sean paid \$12 to get his pet-sitting business started and has 130 clients.

- 4 Sandy bought x notebooks and y pencils for \$9.77. Each notebook cost \$1.95 and each pencil cost \$0.49. Which equation represents this situation?

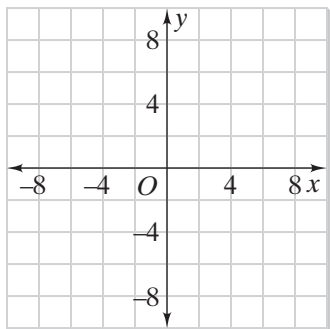
- F $9.77 = 1.95x - 0.49y$
- G $9.77 = 1.95x + 0.49y$
- H $9.77 = 1.95y - 0.49x$
- J $9.77 = 1.95y + 0.49x$

- 5 Which function best describes the data in the table below?

x	1	3	5	7
y	5	13	21	29

- A $y = 4x$
- B $y = 4x + 1$
- C $y = 2x$
- D $y = 2x + 2$

- 6 Garrett purchased x pounds of beef at \$4 each and y bags of chips at \$3 each. He spent less than \$30, not including tax. Use the grid below to graph the inequality $4x + 3y < 30$.



Which point represents a reasonable number of pounds of beef and bags of chips that Garrett may have purchased?

- F** (2, 8) **H** (5, 3)
G (7, 1) **J** (6, 4)
- 7 What is the equation of the line that passes through the points (2, 3) and (5, 6)?
- A** $y = x + 3$ **C** $y = -x + 3$
B $y = x + 1$ **D** $y = -x + 1$
- 8 The owner of a landscaping company uses the function $y = 35 + 20x$ to determine the charge for service, where y is the charge and x is the number of hours of service. What does it mean if the company changes the function to $y = 35 + 25x$?
- F** The initial cost for the landscaping service increased to \$25.
G The total cost for landscaping service increased to \$25.
H The cost per hour of landscaping service increased to \$25.
J The number of employees at the landscaping company increased to 25.

- 9 How does the graph of $y = 2x^2$ differ from the graph of $y = 2x^2 - 3$?

- A** The graph of $y = 2x^2 - 3$ is wider than the graph of $y = 2x^2$.
B The graph of $y = 2x^2 - 3$ is narrower than the graph of $y = 2x^2$.
C The graph of $y = 2x^2 - 3$ is shifted down 3 units from the graph of $y = 2x^2$.
D The graph of $y = 2x^2 - 3$ is shifted up 3 units from the graph of $y = 2x^2$.

- 10 Which situation cannot be represented a linear function?

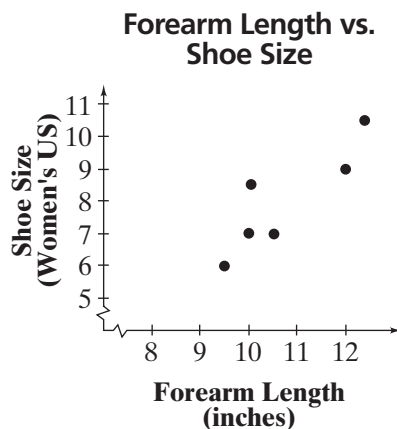
- F** the number of wheels on n bicycles
G the total cost of tickets at \$10 per ticket
H the number of right angles in n rectangles
J the population of bacteria that doubles each day

- 11 The expression s^8 represents the volume of a large cube. The expression s^3 represents the volume of a small cube. What is the ratio of the volume of the large cube to the volume of the small cube?

- A** s^5
B s^{11}
C s^{24}
D s^{32}

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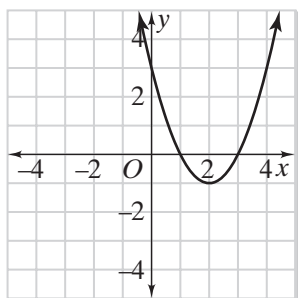
- 12 The following graph shows the relationship between the forearm length and shoe size of a group of mathematics students.



Based on these results, if Bethany has a forearm length of 8 inches, which is the best estimate of her shoe size?

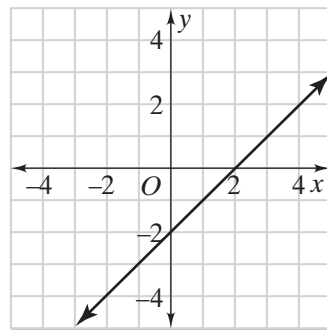
- F** 11 **H** 7
G 9 **J** 5

- 13 Which statement is true of the graph?



- A** The x -intercepts are 0 and 3.
B The y -intercept is 1.
C The minimum is at $x = 2$.
D The minimum value is 2.

- 14 Which best describes the effect of shifting the y -intercept of this graph down 3 units, but keeping the x -intercept the same?



- F** The slope increases.
G The slope decreases.
H The slope does not change.
J The slope changes sign.

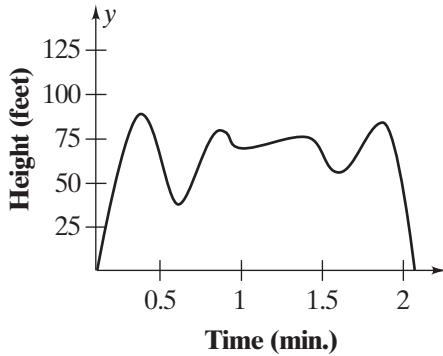
- 15 What are the roots of the quadratic equation $4x^2 + 4x - 8 = 0$?

- A** 2 and -1
B 2 and 1
C -2 and -1
D -2 and 1

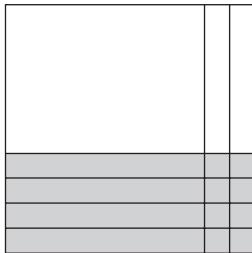
- 16 If the domain of the function $y = x^2 - 2$ is $0 < x < 5$, what is the corresponding range?

- F** $0 < y < 5$
G $-2 < y < 23$
H $-5 < y < 0$
J $2 < y < 23$

- 17 The graph below best represents which of the following situations?



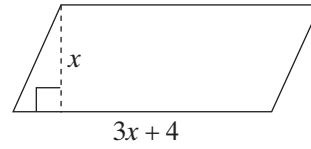
- A An ant crawls into an anthill.
 - B A person rides a roller coaster.
 - C A family drives through a mountainous area.
 - D A racer runs a one-mile race around a track.
- 18 The quadratic expression $x^2 - 2x - 8$ is modeled below using algebra tiles.



What is the greater of the two solutions to the equation $x^2 - 2x - 8 = 0$?

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

- 19 Which equation best represents the area, A , of the parallelogram below?



- A $A = 3x^2 + 4x$
 - B $A = 4x + 4$
 - C $A = 3x^2 + 4$
 - D $A = 7x^2$
- 20 The function $f(x) = 1.85x^2 + 2400$ represents the population of a city where x is the number of years since 2000. If this trend continues, what will be the population in 2015? Round to the nearest whole number.
- F 2428
 - G 2625
 - H 2816
 - J 4616
- 21 The function $y = 60x$ represents the cost of a gym membership where x is the number of months. What is the range of the function?
- A all real numbers
 - B all real numbers greater than or equal to 60
 - C all real numbers less than or equal to 60
 - D nonnegative multiples of 60
- 22 What is the value of x if $(x, 1)$ is a solution to the equation $2x - y = 12$?
- Record your answer and fill in the bubbles on your answer document.

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23 Which equation best describes the relationship between hours of homework (h) and the grade level (g) in this table?

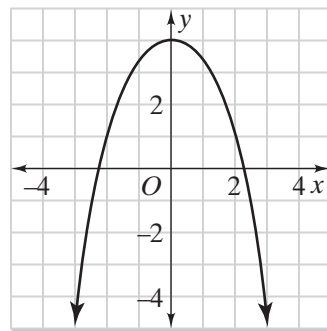
Hours of Homework	Grade Level
0	1
0.5	3
1.0	5
1.5	7
2.0	9

- A $g = 4h + 1$
- B $h = 4g + 1$
- C $g = 2h + 2$
- D $h = 2g + 2$

24 The function $f(x) = 0.75x$ models the weight in pounds, $f(x)$, of x calculators. What is the range of the function?

- F all real numbers
- G all whole numbers
- H all real numbers greater than 0 and less than 0.75
- J all nonnegative multiples of 0.75

25 Which type of function is graphed below?



- A quadratic
- B exponential
- C linear
- D logarithmic

26 Which equation best represents the relationship shown in the table below?

x	-3	-1	0	1
y	3	7	9	11

- F $y = x + 9$
- G $y = x + 8$
- H $y = 2x + 9$
- J $y = 11x$

27 In the equation $y = 2x^2 + 5x + 6$, what is the value for y when x equals 3?

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

28 Which expression is equivalent to $(3 + 2c)4c^2 + (2c)(2c^2 + 3)$?

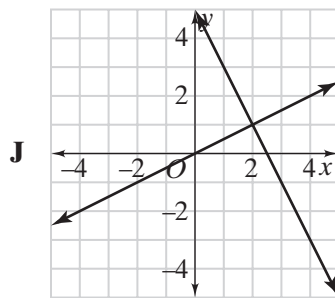
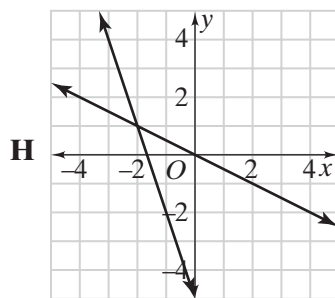
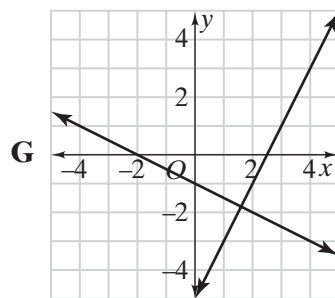
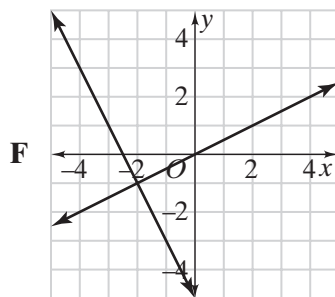
- F $6c^2 + 6c + 12$
- G $12c^3 + 12c^2 + 6c$
- H $12c^3 + 6c^2 + 12c$
- J $12c^2 + 8c + 10$

29 What is the solution set for the equation $5(4x - 3)^2 = 20$?

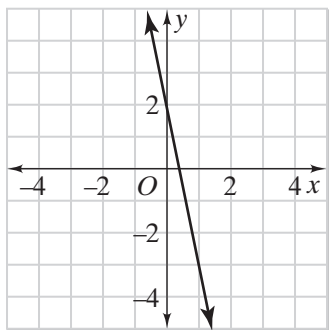
- A $\left\{\frac{5}{4}, -\frac{1}{4}\right\}$
- B $\left\{-\frac{5}{4}, -\frac{1}{4}\right\}$
- C $\left\{\frac{5}{4}, \frac{1}{4}\right\}$
- D $\left\{-\frac{5}{4}, \frac{1}{4}\right\}$

30 Which graph shows the solution to the system of equations below?

$$\begin{aligned} 2x + 4y &= 0 \\ 3x + y &= -5 \end{aligned}$$



31 Which equation best represents the line on the graph?



- A $2y + 5x = 4$
- B $y - 5x = 1$
- C $2y - 10x = 2$
- D $y + 5x = 2$

32 The number of fish in a lake was 250 in 2001. In 2003, there were 310 fish. If the number of fish continues to increase at this rate, what is a reasonable estimate for the number of fish in the lake in 2009?

- F 370
- G 420
- H 460
- J 490

33 The function $y = -25x - 300$ represents the depth of a submarine after x minutes. What does the y -intercept represent?

- A the initial depth of the submarine
- B the rate at which the submarine submerges
- C the rate at which the submarine travels
- D the final depth of the submarine

34 Which equation represents the pattern shown in the table below?

x	1	2	3	4
y	3	-2	-7	-12

- F $y = x + 2$
- G $y = x - 4$
- H $y = -5x + 8$
- J $y = -3x + 6$

35 What kind of correlation is shown in the data in the table?

x	2	4	6	8	10	12
y	2.5	0.5	0	-1.5	-4	-3.5

- A positive correlation
- B negative correlation
- C no correlation
- D perfect correlation

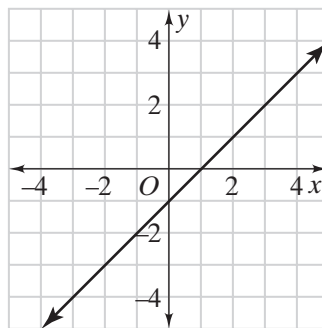
36 Raul has 21 rubber balls, which are all either red or blue. He has twice as many red balls, r , as blue, b . Which system of equations could be used to calculate the number of balls of each color Raul has?

- F $r + b = 21$
 $2b - r = 21$
- G $r + b = 21$
 $2b - r = 0$
- H $r + b = 21$
 $2b + r = 0$
- J $r + b = 21$
 $2r - b = 0$

37 What is the x -intercept of the graph of the function $f(x) = 2x - 9$?

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

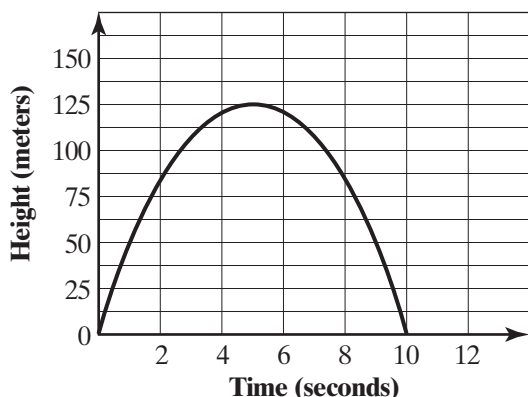
38 The line represented by the equation $y = x - 1$ is shown below.



Which of the following best describes the change if the line becomes $y = 3x - 1$?

- F The x -intercept increases.
- G The y -intercept increases.
- H The x -intercept decreases.
- J The y -intercept decreases.

- 39 A model rocket was fired upward at an initial speed of 50 meters per second. The function $h = 50t - 4.9t^2$ shows the relationship between the time elapsed and the rocket's height above the ground, where t is the time in seconds and h is the height in meters. The graph of this function is shown below.



What is the best conclusion about the rocket's movement?

- A The rocket returned to the ground in about 10 seconds after it was fired.
 - B The speed of the rocket was greatest at about 5 seconds after it was fired.
 - C The rocket traveled 100 meters.
 - D The rocket never reached the ground after being fired.
- 40 A local music festival offers a discount for group ticket sales. The cost per ticket and the number of tickets purchased per order form an inverse variation. If it cost \$12 per ticket when purchasing 15 tickets, how much does it cost per ticket when purchasing 20 tickets?
- F \$3
 - G \$6
 - H \$9
 - J \$15

- 41 The function $f(x) = -2x + 14,500$ represents the total elevation of a mountain climber after x minutes. What does the slope represent?
- A the initial height of the mountain climber
 - B the rate at which the mountain climber descends
 - C the rate at which the mountain climber ascends
 - D the total decrease in elevation

- 42 Simplify the algebraic expression $2(x + 3)(x - 3) - 3(x^2 + 2x + 1)$.
- F $-x^2 + 6x - 17$
 - G $-x^2 - 6x - 21$
 - H $x^2 + 6x + 21$
 - J $x^2 - 6x + 17$

- 43 If Marli can jog 3 miles in 24 minutes, how long will it take her to jog 5 miles if she jogs at the same rate?
- A 1.6 minutes
 - B 14.4 minutes
 - C 40 minutes
 - D 120 minutes
- 44 A function is described by the equation $f(x) = -3x + 5$. The replacement set for the independent variable is $\{1, 3, 5, 7\}$. Which set is the corresponding set for the dependent variable?
- F $\{1, 3, 5, 7\}$
 - G $\{2, 4, 10, 16\}$
 - H $\{-1, -3, -5, -7\}$
 - J $\{-16, -10, -4, 2\}$
- 45 The function $f(x) = 45x$ models the cost, $f(x)$, of purchases x video games. What is the domain of the function?
- A all real numbers
 - B all whole numbers
 - C 0 to 45 dollars
 - D all nonnegative multiples of 45
- 46 At a convenience store, a gallon of milk and a bottle of water cost a total of \$4.15. The cost of 4 gallons of milk and 3 bottles of water is \$14.60. The following system of equations models this situation
- $$\begin{aligned}m + w &= 4.15 \\4m + 3w &= 14.60\end{aligned}$$
- Which statement below describes the solution to this system of equations?
- F There is no reasonable solution to this system of equations because the number of bottles of milk must be a whole number.
 - G There is no reasonable solution to this system of equations because the number of bottles of water cannot be negative.
 - H There is a reasonable solution to this system of equations.
 - J This system of equation has no solution.

GO ON 

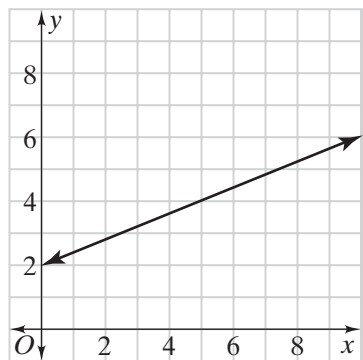
47 Jenny can spend no more than \$7 on school supplies. Each folder, f , costs \$0.50 and each pen, p , costs \$2. Which of the following inequalities best represents the number of folders and pens she can purchase?

- F $2p \geq 7 + 2f$
- G $0.5f + 2p \leq 7$
- H $2.5(f + p) < 7$
- J $0.5f \geq 7 + 2p$

48 What are the solutions to the quadratic equation $x^2 + x - 56 = 0$?

- F -8 and 7
- G -7 and 8
- H 1 and -56
- J -1 and 56

49 What is m , the slope of the line that is shown in the graph below?

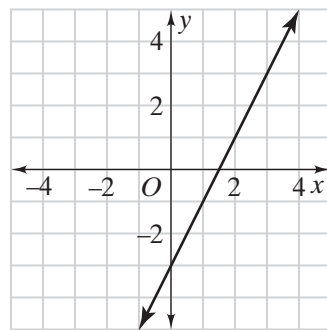


- A $\frac{2}{5}$
- B $-\frac{2}{5}$
- C $\frac{5}{2}$
- D $-\frac{5}{2}$

50 A marketing company uses the function $y = 14x + 8$ to determine the cost of purchasing x concert tickets, where y is the cost of the ticket and service charge. What does it mean if the company changes the function to $y = 14x + 6$?

- F The number of concert tickets sold decreased to 6.
- G The total cost for concert tickets decreased to \$6.
- H The cost per concert ticket decreased to \$6.
- J The service charge decreased to \$6.

51 Which equation best describes the graph below?



- A $y = -2x + 3$
- B $y = 2x + 3$
- C $y = 2x - 3$
- D $y = -2x - 3$

52 Bob sold 14 magazine subscriptions, for a total of \$740. The cost of a one-year subscription is \$40 and the cost of a two-year subscription is \$70. How many two-year subscriptions did he sell?

F 5

G 6

H 7

J 8

53 Mrs. Austen has two retirement accounts. In one account, she placed \$15,000. This account decreased in value by 6.5% over the first year. In her other account, she placed d dollars, and this account gained 4% in value in the first year. Which equation describes v , the total value of her retirement accounts after the first year?

A $v = 15,000(1.065) + d(0.96)$

B $v = 15,000(0.935) + d(1.04)$

C $v = -15,000(1.065) - d(0.96)$

D $v = 15,000(1.065) + d(1.04)$

54 A private lesson for guitar costs \$20 per lesson (l) plus an annual \$15 materials fee. Which equation represents the total cost (c) of private lessons for one year?

F $l = 20c - 15$

G $c = 20l + 15$

H $c = 20l - 15$

J $l = 20c + 15$

