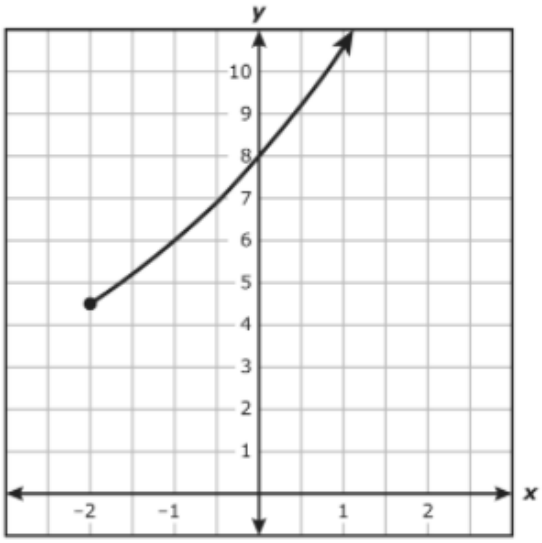
Algebra 2 Honors Summer Packet **Name** _____

Please work through these Algebra 1 based questions. The expectation is that you enter Honors Algebra 2 with a firm grasp of Algebra 1 concepts. A digital copy of this packet along with solutions and review resources are in Google Classroom code xj67u7r.

1. Evaluate: $2 - 3(4^2) + 8 \div 4$

2. Simplify $9q^2 - \frac{2}{3}(3q - 7) + 5q^2$?

3. A part of an exponential function is graphed on the grid.



Write an inequality and represents the domain the of part shown.

4. What value of n makes the equation $4(0.5n - 3) = n - 0.25(12 - 8n)$ true?

5. Researchers in Antarctica discovered a warm sea current under a glacier that is causing the glacier to melt. The ice shelf of the glacier had a thickness of approximately 450 meters when it was first discovered. The thickness of the ice shelf is decreasing at an average rate of 0.06 meters per day.

Write a function that can be used to find the thickness of the ice shelf in meters x days since the discovery?

6. Which table does **NOT** show y as a function of x?

A.

x	$\frac{1}{10}$	$\frac{1}{8}$	$\frac{1}{5}$	$\frac{1}{4}$	$\frac{1}{2}$
y	9	11	9	14	7

B.

x	14	15	16	17	18
y	100	80	110	100	90

C.

x	-0.2	0.6	-1.3	1.0	-0.2
y	5.8	-3.7	4.4	-0.9	8.1

D.

x	-24	21	24	-27	29
y	2.7	2.8	2.7	2.5	2.5

7. An organization has a monthly budget of x dollars. From that monthly budget \$2,070 is spent on salaries. One-fourth of the remaining budget is spent on monthly activities. Write a function can be used to find the amount in dollars spent on monthly activities?

8. Solve: $-\frac{5}{6}p = 12$.

9. What is the solution to $8x - 3(2x - 4) = 3(x - 6)$?

10. What value of x makes the equation $-5x - (-7 - 4x) = -2(3x - 4)$ true?

11. Solve: $\frac{3 - x}{6} = \frac{-2}{5}$

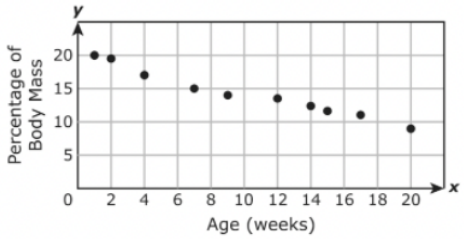
12. The table shows a linear relationship between x and y.

x	y
−20	96
−12	60
−6	33
−2	15

What is the rate of change of y with respect to x?

13. Rewrite 8x – 2y = 24 in slope intercept form.

14. Characterize the relationship of the data in the graph.

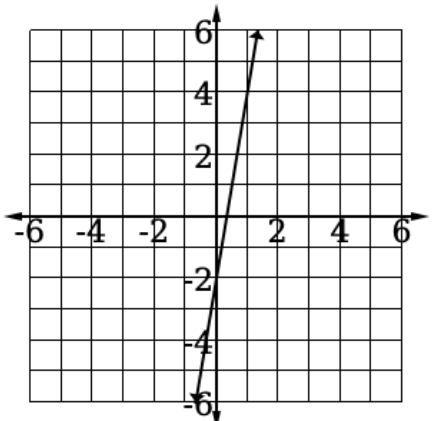


A. Strong Positive B. Weak Positive

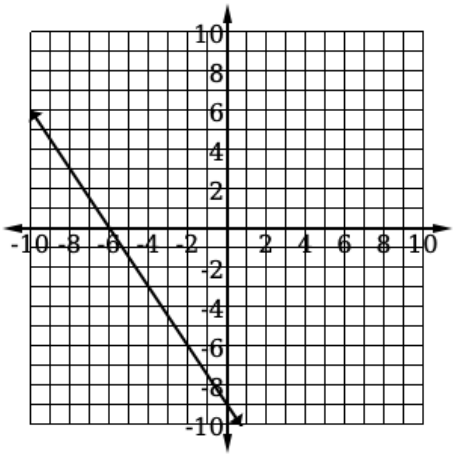
C. Strong Negative D. Weak Negative

15. The graph of a function is shown on the grid.

What is the y-intercept?

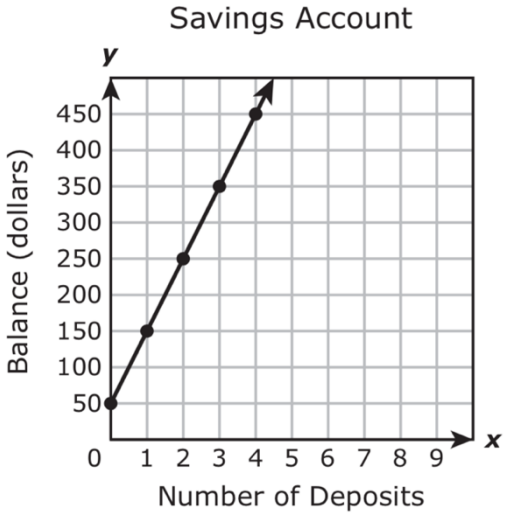


16. The graph of linear function g is shown on the grid.



What is the zero of g?

17. A savings account balance can be modeled by the graph of the linear function shown on the grid.



What is the rate of change of the balance with respect to the number of deposits?

18. The function $y = 3.75 + 1.5(x - 1)$ can be used to determine the cost in dollars for a taxi ride of x miles. What is the rate of change of the cost in dollars with respect to the number of miles?

19. The value of y is directly proportional to the value of x. If $y = 35$ when $x = 140$, what is the value of y when $x = 70$?

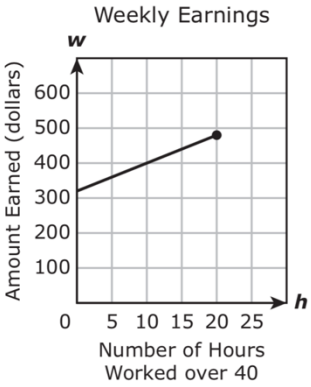
20. A recent survey of 5000 people found that 57% prefer to sleep with some ambient noise. The margin of error is 3%. Write an absolute value inequality that represents the range of those who prefer some ambient noise when sleeping.

21. The table represents some points on the graph of a linear function.

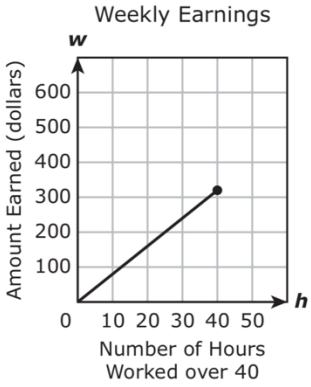
x	-7.5	-3.5	-1	2	3.5
y	12	0	-7.5	-16.5	-21

What is the rate of change?

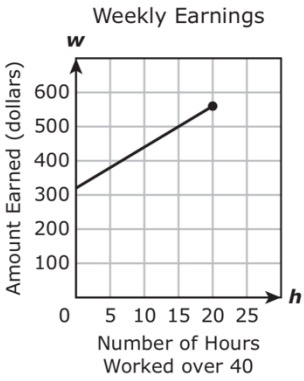
22. A lifeguard earns $320 per week for working 40 hours plus $12 per hour worked over 40 hours. A lifeguard can work a maximum of 60 hours per week. Which graph best represents the lifeguard's weekly earnings in dollars for working h hours over 40?



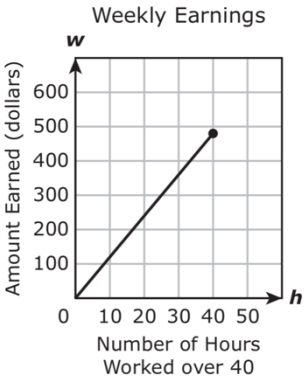
A



B



C



D

23. Write an equation in slope intercept form that has a graph that passes through the point $(4, -2)$ and is parallel to the line $6x - 2y = 18$?

24. The table represents some points on the graph of a linear function.

x	y
-20	-268
-14	-196
-8	-124
-1	-40

Which equation represents the same relationship?

A. $y + 268 = \frac{1}{12}$

B. $y + 20 = \frac{1}{12}(x + 268)$

C. $y + 268 = 12(x + 20)$

D. $y + 20 = 12(x + 268)$

25. The original function $y = x + 4$ is graphed on the same grid as the new function $y = x - 1$. Which of the following statements about these graphs is true?

A. The graph of the original function is perpendicular to the graph of the new function.

B. The graph of the original function is parallel to the graph of the new function.

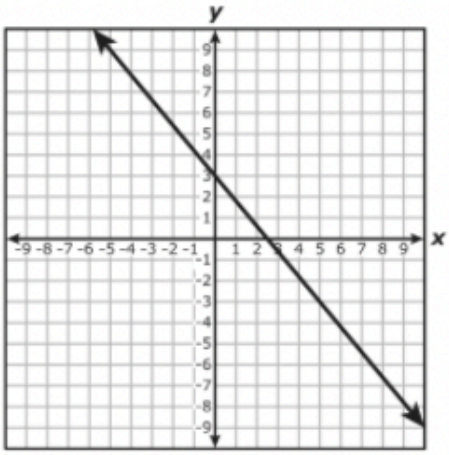
C. The graph of the new function has shifted up 4 units.

D. The graph of the new function has shifted down 1 unit.

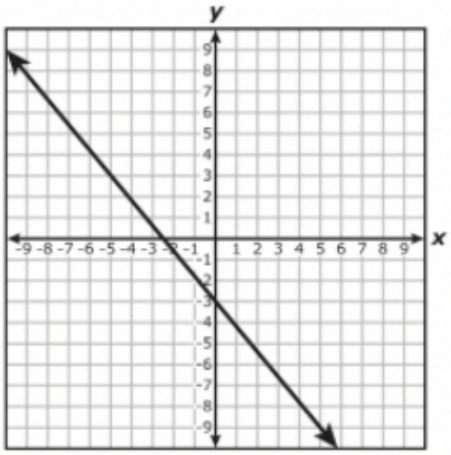
26. Write the equation of the line is that is perpendicular to $y - 3 = 3(x + 2)$?

27. Which graph best represents $-5y = -6x + 15$?

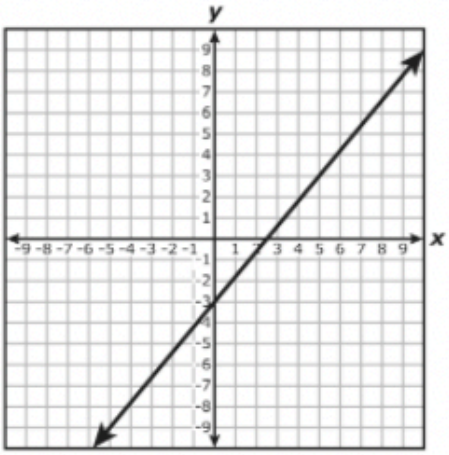
A.



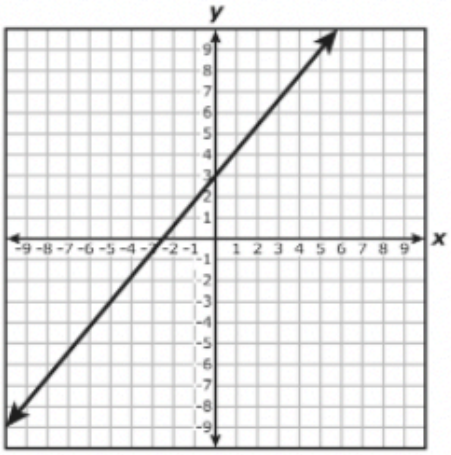
B.



C.



D.



28. The table shows the heights and the lengths of several rectangles. The correlation coefficient is 0.17. What does this indicate about the strength of the linear association between the height and the length of these rectangles?

height (in)	41	70	21	34	10	92	54	24	10	35	42	66
length (in)	21	25	32	12	16	45	40	23	45	35	21	14

29. Write the inequality that describes the solutions to $5(3-x) < -2x + 6$?

30. A student is ordering a flower arrangement. She can choose any combination of roses and carnations for her flower arrangement, and she does not want to spend more than \$30.

If roses cost \$3 each and carnations cost \$2 each, write an inequality that represents all possible combinations of x roses and y carnations?

31. The graph of $0.5x - 2y = 3$ is shown on the grid.

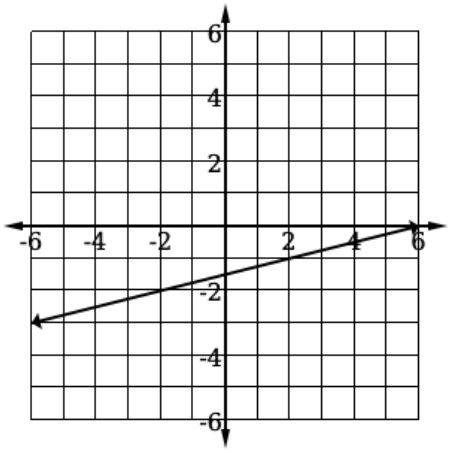
Which ordered pair is in the solution set of $0.5x - 2y \geq 3$?

A. $(-2, 0.5)$

B. $(2, 1)$

C. $(2, -1)$

D. $(-2, -0.5)$



32. Hermione solved an inequality that has a solution set of [–5, ∞). Which inequality did she solve?

A. $-\frac{2}{5}x \leq 2$

B. $-\frac{5}{2}x \leq 2$

C. $-\frac{2}{5}x \geq 2$

D. $-\frac{5}{2}x \geq 2$

33. What is the solution to the equation $6(7b + 4) = -60$?

34. The temperature at 6:00 p.m. is 70˚F. The temperature will drop 6˚F each hour. Write an equation in slope intercept form that models the temperature in y degrees Fahrenheit after x hours.

1. A bus travels two different routes: the Green Route and the Blue Route. The routes are different lengths. On Monday the bus traveled the Green Route 6 times and the Blue Route 5 times, traveling a total of 52 miles. On Tuesday the bus traveled the Green Route 12 times and the Blue Route 13 times, traveling a total of 119 miles. What is the length of the Green Route in miles?

2. The ordered pair (3, 2) is the solution of which system of equations?

A $y = -\frac{1}{3}x + 3$
$y = -3x + 2$

C $y = -\frac{1}{3}x + 3$
$y = 2x - 4$

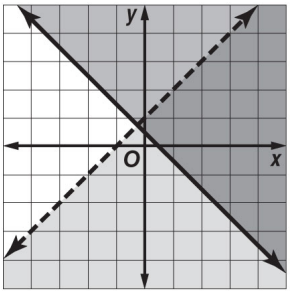
B $y = -\frac{1}{3}x + 3$
$y = 2x$

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

3. Use substitution to find the value of n in the system of equations.

$n = 3m - 11$
$2m + 3n = 0$

4. Which is a solution of the system of inequalities?



A (0, 2)

B (0, 0)

C (1, 1)

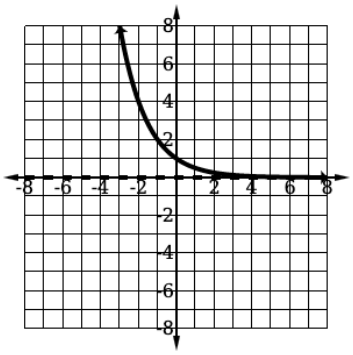
D (2, 4)

5. A rectangle has a length of $25x^3$ and a width of $5x^2$. Find the area in square units.

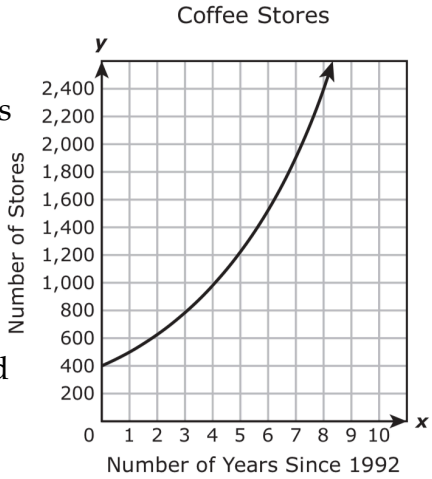
6. Simplify $\frac{(a^{-2}b^4)^{-6}}{(a^4b^{-8})^3}$. Assume the denominator is not equal to zero.

7. A city's population is about 763,000 and is increasing at an annual rate of 1.5%. Write an equation that can be used to predict the population of the city in x years?

8. The graph of an exponential function is shown. State the domain and range of the function.

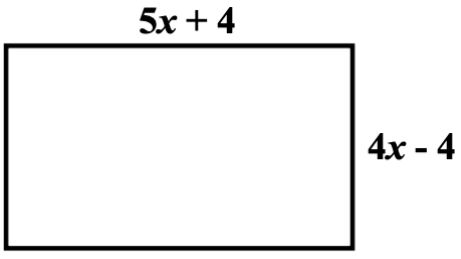


9. The number of stores opened by a coffee company can be modeled by the exponential function graphed on the grid, where x is the number of years since 1992. Based on the graph which statement does NOT appear to be true?



A. The coffee company had opened 400 stores by the end of 1992.
B. The coffee company opened 100 stores in one year.
C. Every year the number of stores the coffee company opened increased by 25%.
D. Since 1992 the coffee company has opened 250 stores each year.

10. The diagram shows the floor plan of a storage facility. All dimensions are given in feet. Write an expression that represents the area of the storage facility in square feet?



11. Multiply: $(3x + 2)(4x^2 - 2x - 7)$

12. Which expression is **NOT** completely factored?

A. $5m^2(3m + 7)$

B. $-a(4ab - 7ac + b)$

C. $3v(8v - 32)$

D. $4h(h - 9)$

13. Factor completely: $2p^3 + p^2 - 8p - 4$

14. Factor completely: $6x^2 + 13x + 5$?

15. Which statement about $f(x) = 2x^2 - 3x - 5$ is true?

A. The zeros are $-\frac{5}{2}$ and -1, because $f(x) = (x + 1)(2x + 5)$.

B. The zeros are $-\frac{5}{2}$ and 1, because $f(x) = (x - 1)(2x + 5)$.

C. The zeros are -1 and $\frac{5}{2}$, because $f(x) = (x + 1)(2x - 5)$.

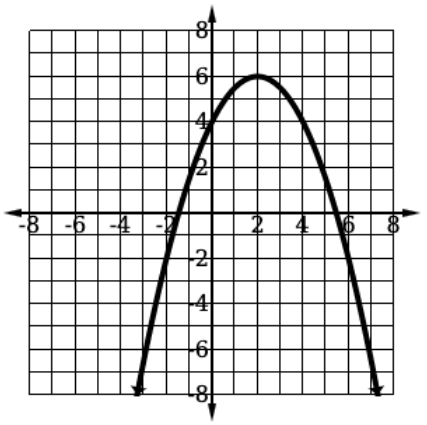
D. The zeros are 1 and $\frac{5}{2}$, because $f(x) = (x - 1)(2x - 5)$.

16. Factor completely: $36x^2 - 49$?

17. The table shows some ordered pairs that belong to quadratic function h.
What is the range of h?

x	-4	-2	0	2	3	4	6
$h(x)$	41	17	1	-7	-8	-7	1

18. The graph of a quadratic function is shown on the grid.
What is the equation of the axis of symmetry?



19. What are the zeros of the function $f(x) = 6x^2 - 11x + 3$?

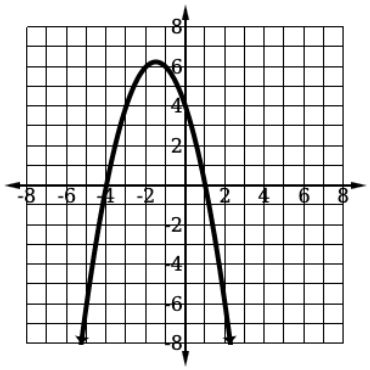
20. The graph of a quadratic function is shown. Which function is best represented by this graph?

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

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

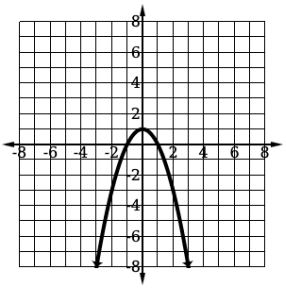
C. $f(x) = x^2 - 3x - 4$

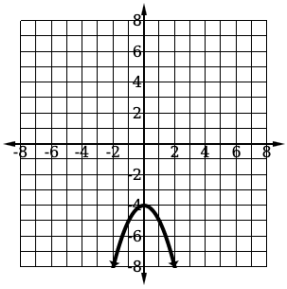
D. $f(x) = -x^2 + 3x + 4$

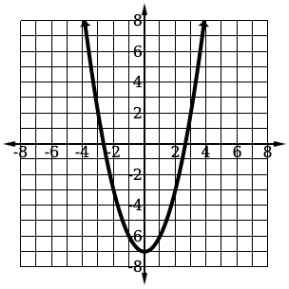


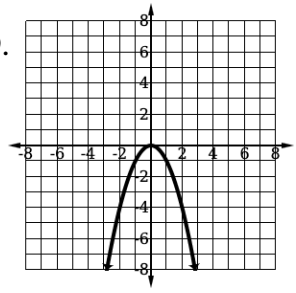
21. What is the domain of $f(x) = 9 - x^2$?

22. Function p is in the form $y = ax^2 + c$. If the values of a and c are both less than 0, which graph could represent p ?

A. 

B. 

C. 

D. 

23. The graph of $f(x) = x^2$ was transformed to create the graph of $g(x) = (x - 7.5)^2$. Describe this transformation.

24. Which quadratic function in vertex form can be represented by the graph that has a vertex at $(3, -7)$ and is the maximum value of the parabola?

A. $y = -\frac{3}{4}(x + 3)^2 + 7$

B. $y = \frac{3}{4}(x + 3)^2 - 7$

C. $y = \frac{3}{4}(x - 3)^2 + 7$

D. $y = -\frac{3}{4}(x - 3)^2 - 7$

25. Stuart, a highly-evolved squirrel, is solving $a^2 + 5a - 7 = 0$ by completing the square:

$$a^2 + 5a + _____ = 7 + _____$$

What number should he write in the blank?

26. Stuart changed his mind and decided to solve $a^2 + 5a - 7 = 0$ using the quadratic formula. Which of the following is part of the correct solution process?

A. $a = \frac{25 \pm \sqrt{-5 - 4(1)(-7)}}{2} \rightarrow a = \frac{25 \pm \sqrt{23}}{2}$

B. $a = \frac{25 \pm \sqrt{-5 - 4(1)(-7)}}{2} \rightarrow a = \frac{25 \pm \sqrt{-33}}{2}$

C. $a = \frac{-5 \pm \sqrt{25 - 4(1)(-7)}}{2} \rightarrow a = \frac{-5 \pm \sqrt{-3}}{2}$

D. $a = \frac{-5 \pm \sqrt{25 - 4(1)(-7)}}{2} \rightarrow a = \frac{-5 \pm \sqrt{53}}{2}$

27. Simplify completely: $\sqrt{20} - 2\sqrt{45}$

28. Simplify completely: $\left(\sqrt{7} - \sqrt{10}\right)\left(\sqrt{5} + \sqrt{14}\right)$