

# ALGEBRA SUMMER PACKET 2017

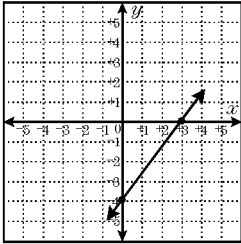
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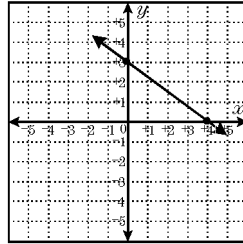
ALL work must be shown on a separate sheet of paper. If no work can be shown, EXPLAIN how you arrived at your answer. This packet will receive a 0 if only answers are circled. Try your best. Remember this is your first grade in ALGEBRA- DUE SEPTEMBER 8, 2017

1. Which of the following is the graph of  $3x + 4y = 12$ ?

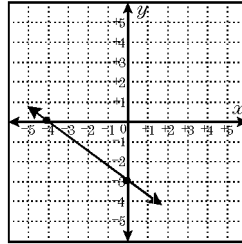
(1)



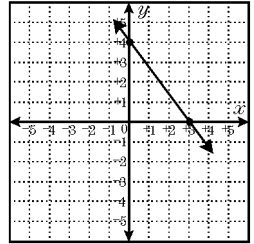
(2)



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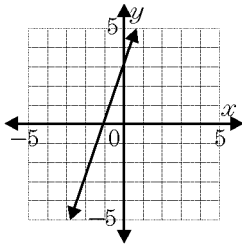


(4)

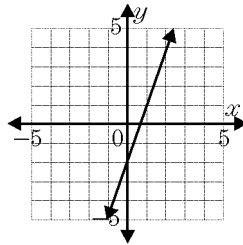


2. Which is the graph of  $y = \frac{1}{3}x - 2$ ?

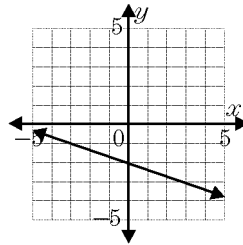
(1)



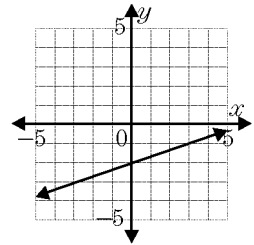
(2)



(3)



(4)



3. Look at the functions.

**Function R**

$x$	$y$
-1	-8
0	-5
1	-2
2	1

**Function S**

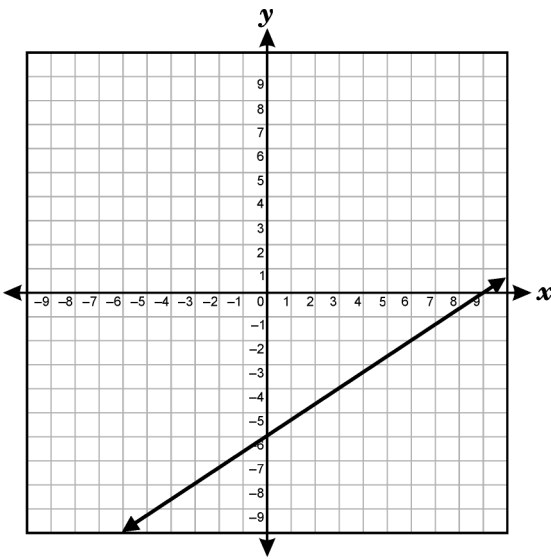
$x$	$y$
-3	1
0	7
2	11
3	13

Compare the functions.

- (1) Function R and Function S describe the same function since they both have  $y$ -intercept of  $-5$ .
- (2) Function R and Function S describe the same function since they both have slope of 3.
- (3) Function R describes  $y = 3x - 5$  and Function S describes  $y = 2x + 7$ .
- (4) Function R describes  $y = 2x - 7$  and Function S describes  $y = 3x + 5$ .

4. Look at the functions.

**Function L**



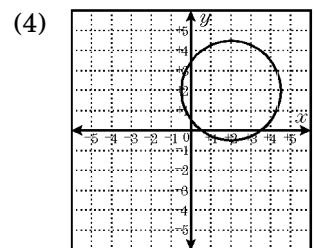
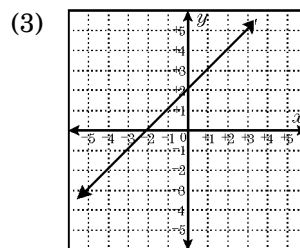
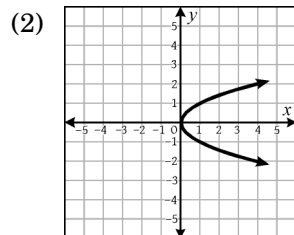
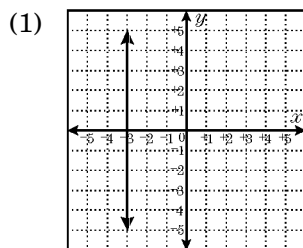
**Function M**

$x$	$y$
-3	4
0	6
3	8
6	10

Compare the functions.

- (1) Function L and Function M describe the same function since they both have  $y$ -intercepts of 6.
- (2) Function L and Function M describe the same function since they both have slope of  $\frac{2}{3}$ .
- (3) Function L has a  $y$ -intercept of  $-6$ , Function M has a  $y$ -intercept of 6, so the functions are not the same.
- (4) Function L has a slope of  $\frac{2}{3}$  but Function Q has a slope of  $\frac{3}{2}$ , so the functions are not the same.

5. Which of the following is a function?



6. If the output is 17, what is the input?

(1) 10

(2) 9

(3) 7

(4) 8

Input	Output
1	1
2	3
3	5
4	7

7. Which of the following relations is a function?

(1)  $\{(2, 2), (0, 7), (-5, 4), (2, -3)\}$

(2)  $\{(3, 3), (1, 7), (-9, 3), (1, -1)\}$

(3)  $\{(-2, 3), (-1, 4), (0, 5), (1, 6)\}$

(4)  $\{(6, 8), (6, 7), (6, 3), (6, 4)\}$

8. The Ace Bowling Lanes charge \$2.25 per game. Rental for bowling shoes is \$1.50 per day. Which formula best describes the cost  $C$  in dollars for renting a pair of shoes and bowling  $G$  games one day?

(1)  $C = 2.25(G + 1.50)$

(2)  $C = 1.50(G + 2.25)$

(3)  $C = 1.50G + 2.25G$

(4)  $C = 2.25G + 1.50$

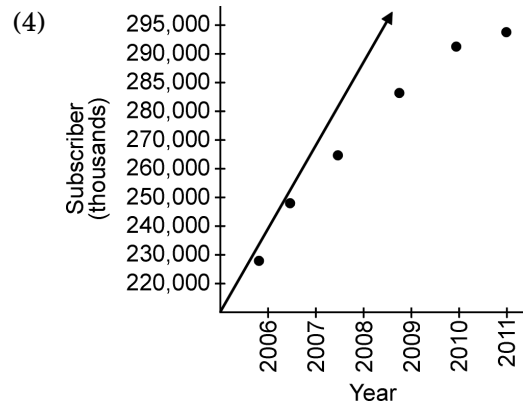
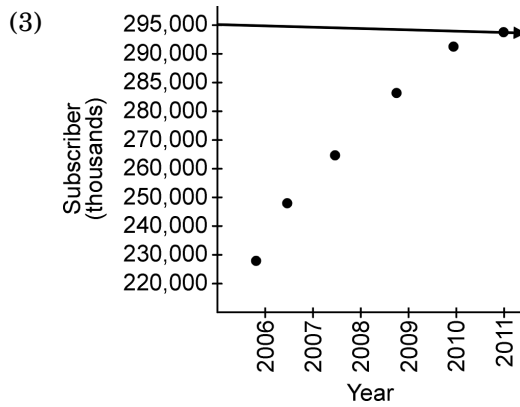
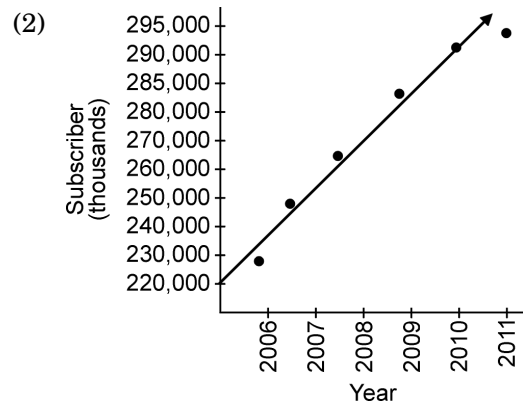
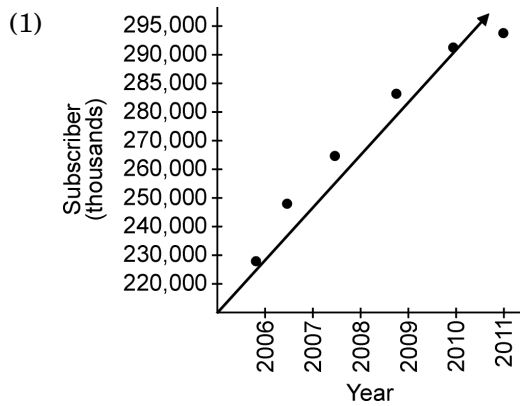
9. More than eighty-five percent of the world owns a mobile device.

**Mobile Device  
Subscribers**

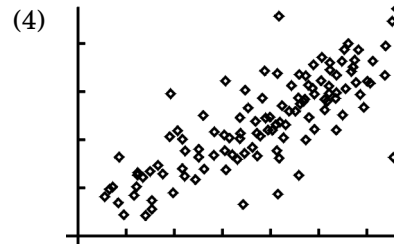
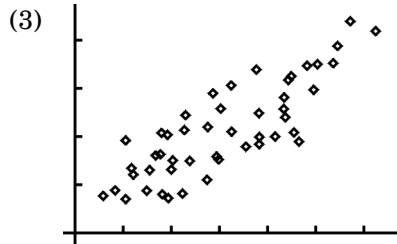
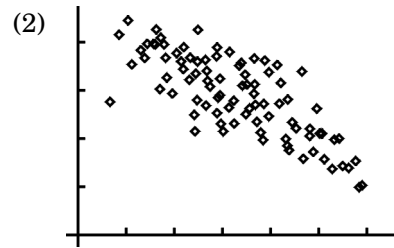
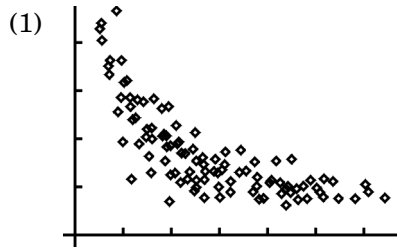
Year	Number Subscribers (1000s)
2006	229,600
2007	249,300
2008	261,300
2009	274,283
2010	285,125
2011	290,304

*data retrieved from Intl. Telecom. Union*

Which of these *best* represents the data?



10. Which data appears to be non-linear?



11. Mary has twice as many pencils as she has pens. Tom borrows a pen. Now, Mary has ten less pens than pencils. How many pencils does Mary have?

- (1) 21 pencils                      (2) 20 pencils                      (3) 19 pencils                      (4) 18 pencils

12. The width of a rectangle is 14 less than twice the length. The perimeter is 32 cm. What is the area of the rectangle?

- (1)  $60 \text{ cm}^2$                       (2)  $72 \text{ cm}^2$                       (3)  $84 \text{ cm}^2$                       (4)  $88 \text{ cm}^2$

13. What is the coefficient of the squared term?

$$5b^2 - 4b + 6$$

(1) 2

(2) 4

(3) 5

(4) 6

14. Simplify:  $\frac{x}{4} + \frac{y}{5}$

(1)  $\frac{xy}{20}$

(2)  $\frac{20}{5x + 4y}$

(3)  $5x + 4y$

(4)  $\frac{5x + 4y}{20}$

15. Simplify:  $(9x^2 - 4x + 5) - (2x^2 + 3)$

(1)  $7x^2 - 4x + 2$

(2)  $7x^2 - 4x + 8$

(3)  $11x^2 - 4x + 2$

(4)  $11x^2 - 4x + 15$

16. In the equation  $S = -\frac{t}{3} - 90$ , find the value of  $t$  when  $S = -100$ .

17. If  $e(x) = f(x)$ , solve:  $e(x) = x - 2$   
 $f(x) = 4 - x$

(1) (3, 1)

(2) (2, 2)

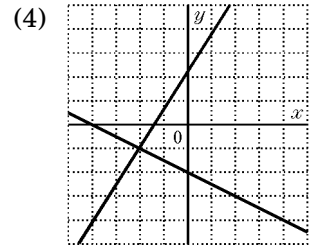
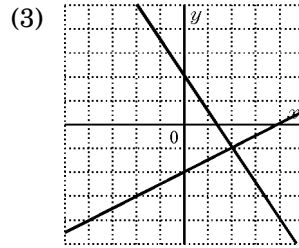
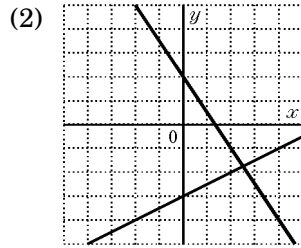
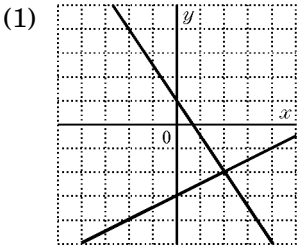
(3) (0, 4)

(4)  $\emptyset$

18. Choose the graph that solves  $f(x) = g(x)$ .

$$f(x) = \frac{1}{2}x - 3$$

$$g(x) = -\frac{3}{2}x + 2$$



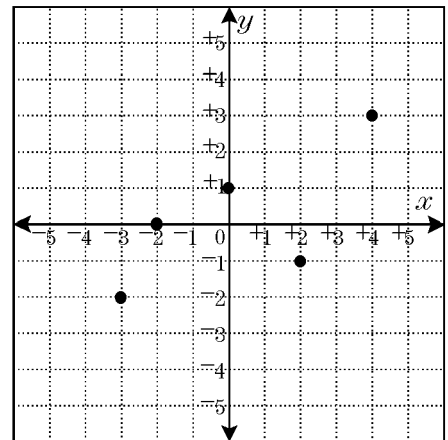
19. What is the range of the graphed relation?

(1)  $\{-3, -2, 1, 2, 4\}$

(2)  $\{-2, -1, 0, 1, 3\}$

(3)  $\{-3, -2, 0, 2, 4\}$

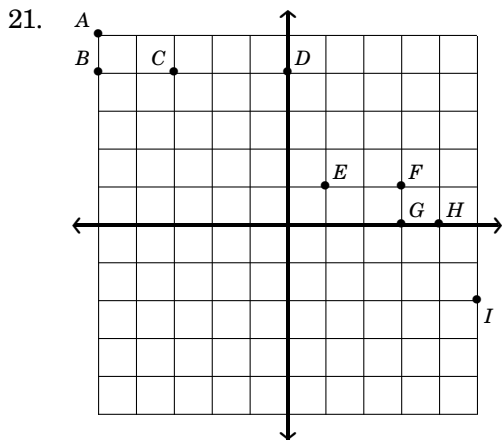
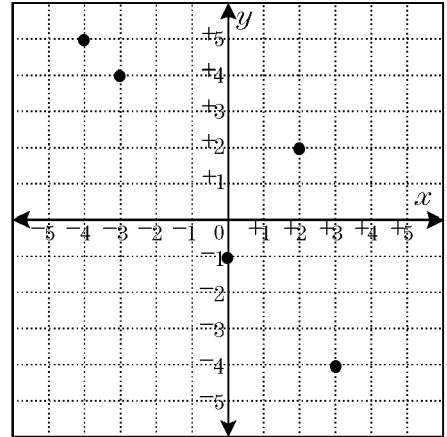
(4)  $\{-2, -1, 0, 1, 2, 3\}$





20. What is the range of the graphed relation?

- (1)  $\{-2, -1, 1, 3, 4\}$     (2)  $\{-4, -3, 0, 2, 3\}$     (3)  $\{-4, -1, 2, 4, 5\}$   
 (4)  $\{-4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$



For the graph of the data points, lay your ruler along the best-fit line and draw the your best fit line. Which of the following is the best approximation for the slope of the line?

- (1)  $-0.5$                       (2)  $-1.5$                       (3)  $-3$                       (4)  $4$

22. Which of the following demonstrates the Distributive Property?

(1)  $2(3 - a) = 6 - 2a$

(2)  $-3(a \cdot b) = (-3a)b$

(3)  $-2(a - 3) = -2a - 3$

(4)  $c + a + c = a + (c + a)$

23. Simplify:  $2(x + 3) + 4(2x + 9)$

(1)  $10x + 42$

(2)  $6x + 12$

(3)  $10x + 36$

(4)  $8x + 42$

24. A school club sells candy bars for a fundraiser. If the club makes a profit of 25¢ on each candy bar and spends \$25 on advertising, how many candy bars must be sold to make a profit of *at least* \$100?

(1) 250 candy bars

(2) 400 candy bars

(3) 500 candy bars

(4) 1000 candy bars

25. The ice skating competition is this weekend. The Friday night event draws a crowd of 12,600 people and the Saturday afternoon event draws a crowd of 10,300 people. How many people can attend the Sunday evening event to have an average attendance for the three days of *at most* 11,000?

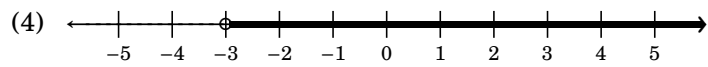
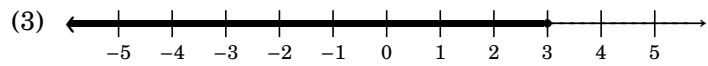
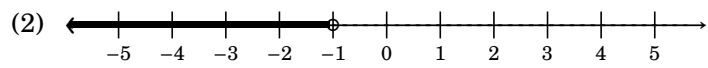
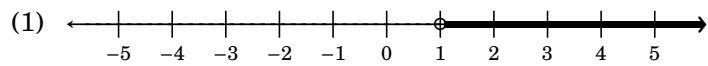
(1) 12,200 people

(2) 10,900 people

(3) 22,900 people

(4) 10,100 people

26. Which graph represents the solution to  $3x - 2 > 1$ ?



27. For the 9th grade trip to High Meadows, Ms. Veloz and Ms. Harriott went to the same store to purchase water. Ms. Veloz purchased 18 arizonas and 32 bottles of water, and spent \$19.92. Ms. Veloz purchase 14 arizonas and 26 bottles of wate, and spent \$15.76.

Write a system of equations to represent the cost of an arizona,  $a$ , and a bottl e of water,  $w$ .

Ariel said that the arizonas might have cost 52 cents and that the bottles of water might have cost 33 cents. Use your system of equations to show Ariel that her prices are *not* possible.

Solve your system of equations to determine the actual cost, *in dollars*, of each arizona and each water bottle.

28. Mimi states that the sum of any rational number and irrational number is an irrational number.

State *one* example that supports Mimi's statement. Justify why your example supports Mimi's statement.

29. Solve the set of equations:

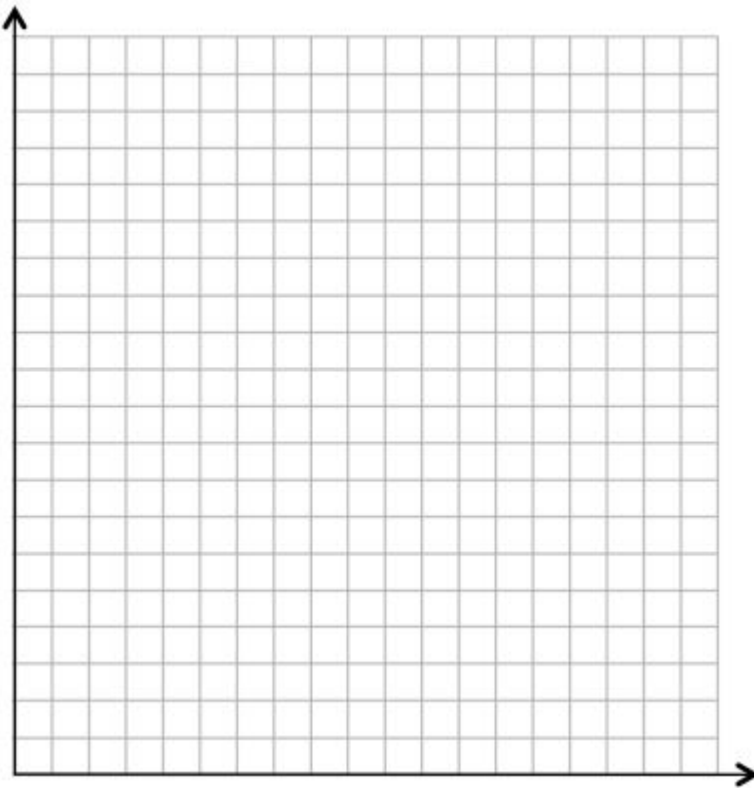
$$\begin{aligned}x - 2y &= 7 \\ 3x + 4y &= -4\end{aligned}$$

30. Scientists record data from experiments with hope of eventually finding patterns that will enable them to predict future results. For example, in testing an antibacterial ointment, a chemist might record the number of bacteria present in a tissue culture after using the ointment for different periods of time. The table below shows a record of the number of hours and the number of bacteria.

**BACTERIA GROWTH**

Number of Hours	Number of Bacteria
2	90
4	70
6	65
8	60
10	56
12	36
14	44
16	38
18	20
20	23
22	18
24	28

- a) Make a scatter plot of this data.



- b) Does there appear to be a relationship between time and the effectiveness of the ointment? Use the scatter plot to support your answer.

- c) After how many hours do you expect one-half of the bacteria to be terminated?