

## Unit 4 Study Guide

### Systems of Equations

This study guide is due on the day of the test, which is \_\_\_\_\_.

All work **MUST BE SHOWN** or you will not receive any credit. If you need to graph the equation, staple the graph paper to the back of the packet. If you need more space, do the work on another piece of paper and staple it to the back. Come see me if you need any help on any of the questions!!

1. Which statements are true for solutions when there is a system of two linear equations in two variables? Select all that apply.
  - A. The intersections of their graphs correspond to their solutions.
  - B. The parallel lines will never have a solution.
  - C. There are two solutions for a system that consists of two linear equations.
  - D. The points of intersection satisfy both the linear equations.
  
2. Solve the system of equations. Show all work.

$$\begin{cases} x + y = 18 \\ 3x - y = 6 \end{cases}$$

3. Which of the following shows the solution to the system of equations below? Select all that apply.

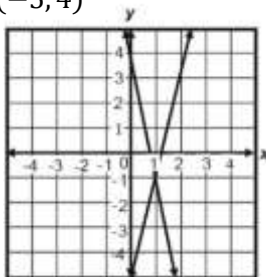
$$\begin{cases} y = 4x - 5 \\ y = -5x + 4 \end{cases}$$

Show all work.

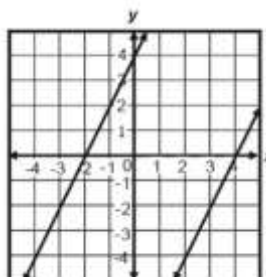
A.  $(1, -1)$

B.  $(-5, 4)$

C.



D.

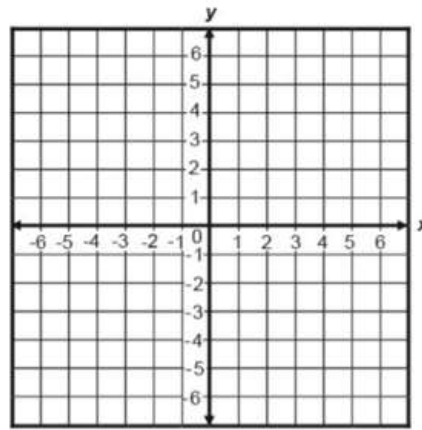


4. Create a table of values for each of the equations below. Plot the values on a coordinate plane. What is the solution to this system of equations?

$$\begin{cases} y = 2x - 3 \\ y = x - 2 \end{cases}$$

x	y
-1	
0	
1	

x	y
-1	
0	
1	



5. Kimberly bought 3 bags of potato chips and 4 candy bars for \$9.75. Elizabeth bought 4 bags of potato chips and 2 candy bars for \$10.50. What is the cost of a bag of potato chips and a candy bar? Select all that apply. Show all work.

- A. potato chips \$3.25
- B. potato chips \$2.25
- C. candy bar \$5.25
- D. candy bar \$0.75

6. What is the x-coordinate of the solution to this system of equations? Show all work.

$$\begin{cases} -2x - y = 6 \\ 8x + 3y = -28 \end{cases}$$

7. Select the statement that correctly describes the solution to this system of equations. Show all work.

$$\begin{cases} -3x + 2y = -22 \\ -5y = -4x + 27 \end{cases}$$

- A. There is no solution
- B. There are infinitely many solutions
- C. There is exactly one solution at (8, 1)
- D. There is exactly one solution at (1, 8)

8. Solve this system of equations  $\begin{cases} y = 3x + 1 \\ y = -2x - 4 \end{cases}$  Show all work.

9. There are 26 students in your class. There are 4 more girls than boys. Use a system of linear equations to find how many boys are in your class. How many girls are in your class? Show all work.

10. Solve this system of equations:  $\begin{cases} 2x + 3y = 0 \\ 8x + 9y = 18 \end{cases}$  Show all work.

11. A high school has a total of 850 students. There are 60 more female students than there are male students.

a. Write a system of equations that represents the situation.

b. How many students are female? Male? Show all work.

12. Solve the system:  $\begin{cases} y = 2x - 5 \\ y = 2x + 7 \end{cases}$  Show all work.

13. Solve the system:  $\begin{cases} -2x + y + 3 = 0 \\ 3x + 4y = -1 \end{cases}$  Show all work.

14. What is the solution to the system of equations?  $\begin{cases} y = -\frac{2}{3}x - 1 \\ 4x + 6y = -6 \end{cases}$  Show all work.

a.  $(-\frac{3}{2}, 0)$

c. no solution

b.  $(0, -1)$

d. infinitely many solutions

15. Which point is a solution of the system of equations shown below? Show all work.

$$\begin{cases} x + 3y = 10 \\ x = 2y - 5 \end{cases}$$

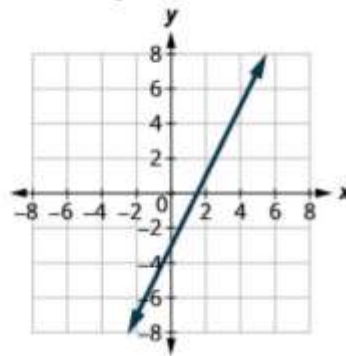
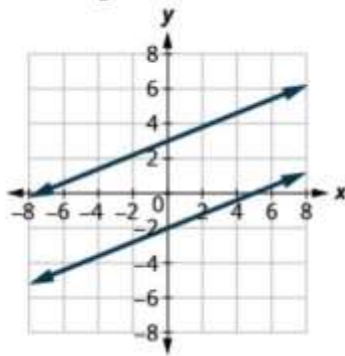
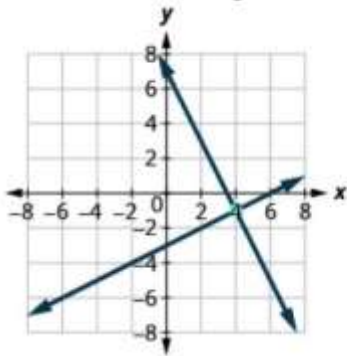
a.  $(1, 3)$

c.  $(55, -15)$

b.  $(3, 1)$

d.  $(-35, -15)$

16. What is the solution for each of the systems of equations?



17. A train ride has one price for adults and one price for children. One family of two adults and two children pays \$62 for the train ride. Another family of one adult and four children pays \$70. Which system of linear equations can you use to find the price  $x$  for an adult and the price  $y$  for a child?

a. 
$$\begin{cases} 2x + 2y = 70 \\ x + 4y = 62 \end{cases}$$

c. 
$$\begin{cases} 2x + 2y = 62 \\ 4x + y = 70 \end{cases}$$

b. 
$$\begin{cases} x + y = 62 \\ x + y = 70 \end{cases}$$

d. 
$$\begin{cases} 2x + 2y = 62 \\ x + 4y = 70 \end{cases}$$

For additional practice test questions, google the following math standards:

8.EE.C.8

8.EE.C.8.a

8.EE.C.8.b

8.EE.C.8.c

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- For practice test questions, also go to Khan Academy and search: 8<sup>th</sup> grade math, systems of linear equations
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# ANSWERS

1. A, B, and D
2. (6, 12)
3. A and C
4. (1, -1)
5. B and D
6.  $x = -5$
7. C
8. (-1, -2)
9. 11 boys and 15 girls
10. (9, -6)
11. a.  $x + y = 850$  and  $x = y + 60$       b. 455 females and 395 males
12. no solution
13. (1, -1)
14. D
15. A
16. maybe (4, -1)                      no solution                      infinitely many solutions
17. D