ALEKS® Section 4.1 Systems #3

Intermediate Algebra / Copy of MAT 135 Spring 2014 (Prof. Porter)

Student Name/ID:

1. For each ordered pair, determine whether it is a solution to the system of equations.

$$\begin{cases} y = 2x - 3 \\ 6x - 3y = 9 \end{cases}$$

(x, y)	Is it a solution?	
	Yes	No
$(4, -5)$	○	○
$(0, -3)$	○	○
$(7, 11)$	○	○
$(-1, 8)$	○	○

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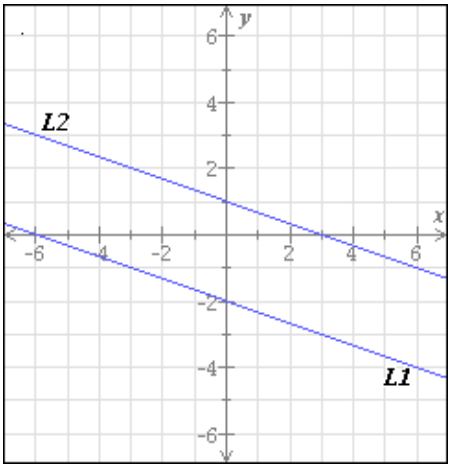
2.

For each system of linear equations shown below, classify the system as "consistent dependent," "consistent independent," or "inconsistent." Then, answer the question about its solutions.

L1: $y=\frac{-1}{3}x-2$

L2: $y=\frac{-1}{3}x+1$



This system of equations is:

- consistent dependent - consistent independent - inconsistent

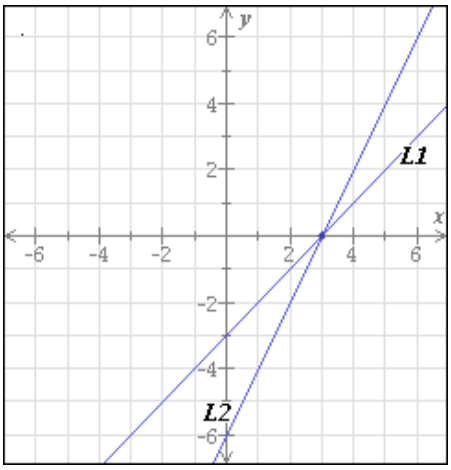
This means the system has:

- a unique solution:

Solution: (,) - no solution - infinitely many solutions

L1: $y=x-3$

L2: $y=2x-6$



This system of equations is:

- consistent dependent - consistent independent - inconsistent

This means the system has:

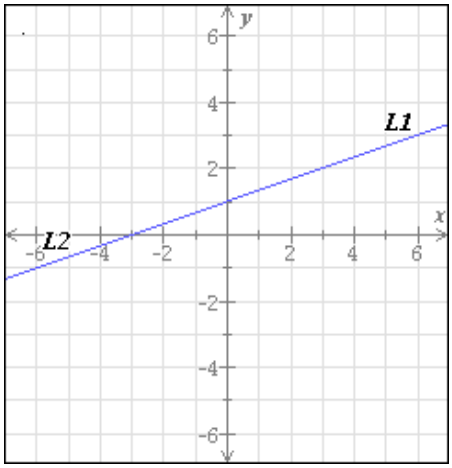
- a unique solution:
Solution: (,)

- no solution

- infinitely many solutions

L1: $y=\frac{1}{3}x+1$

L2: $-x+3y=3$



This system of equations is:

- consistent dependent - consistent independent - inconsistent

This means the system has:

- a unique solution:
Solution: (,)

- no solution

- infinitely many solutions

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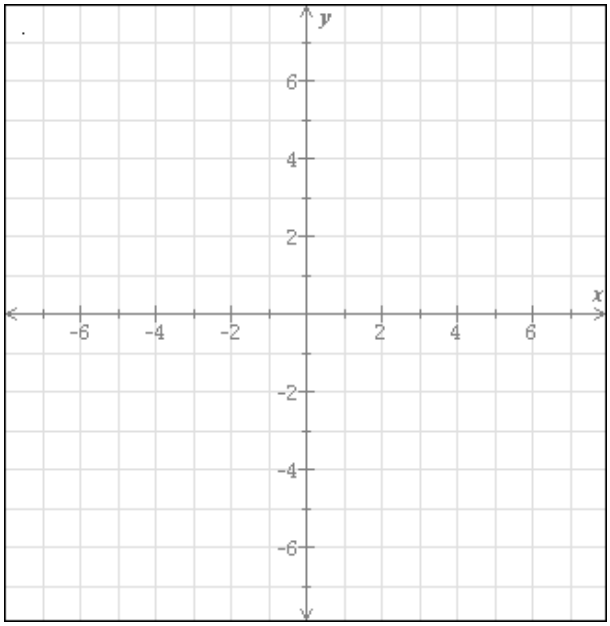
3. Graph the system below and write its solution.

$$\begin{cases} y = \frac{1}{2}x + 3 \\ -2x + y = 6 \end{cases}$$

Note that you can also answer "No solution" or "Infinitely many" solutions.



4. Use substitution to solve the system.

$$\begin{aligned} y &= 3x - 5 \\ 2x - 5y &= 12 \end{aligned}$$

$x = \square$

$y = \square$

5. Solve the following system of equations.

$$5x+6y=-5$$
$$5x+3y=10$$

6. Solve the following system of equations.

$$-3x-4y=11$$
$$-5x-3y=0$$

7. Two systems of equations are given below.
For each system, choose the best description of its solution.
If applicable, give the solution.

$-x+3y=9$ $x-3y=9$	○ The system has no solution. ○ The system has a unique solution: $(x, y) = (\square, \square)$ ○ The system has infinitely many solutions. They must satisfy the following equation: $y = \square$
$x-2y=-8$ $-x+2y=8$	○ The system has no solution. ○ The system has a unique solution: $(x, y) = (\square, \square)$ ○ The system has infinitely many solutions. They must satisfy the following equation: $y = \square$

8. The sum of two numbers is 67 . The larger number is 17 more than the smaller number. What are the numbers?

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9. A party rental company has chairs and tables for rent. The total cost to rent 8 chairs and 3 tables is $\$38$. The total cost to rent 2 chairs and 5 tables is $\$35$. What is the cost to rent each chair and each table?

10. The Johnson family and the Rogers family each used their sprinklers last summer. The water output rate for the Johnson family's sprinkler was $15\,\mathrm{L}$ per hour. The water output rate for the Rogers family's sprinkler was $20\,\mathrm{L}$ per hour. The families used their sprinklers for a combined total of 45 hours, resulting in a total water output of $825\,\mathrm{L}$. How long was each sprinkler used?

Johnson family's sprinkler:
Rogers family's sprinkler:

11. A scientist has two solutions, which she has labeled Solution A and Solution B. Each contains salt. She knows that Solution A is $35\,\%$ salt and Solution B is $80\,\%$ salt. She wants to obtain 90 ounces of a mixture that is $70\,\%$ salt. How many ounces of each solution should she use?

Solution A:
Solution B:

12. Jose bought a desktop computer and a laptop computer. Before finance charges, the laptop cost $\$450$ less than the desktop. He paid for the computers using two different financing plans. For the desktop the interest rate was 6.5% per year, and for the laptop it was 9% per year. The total finance charges for one year were $\$409$. How much did each computer cost before finance charges?

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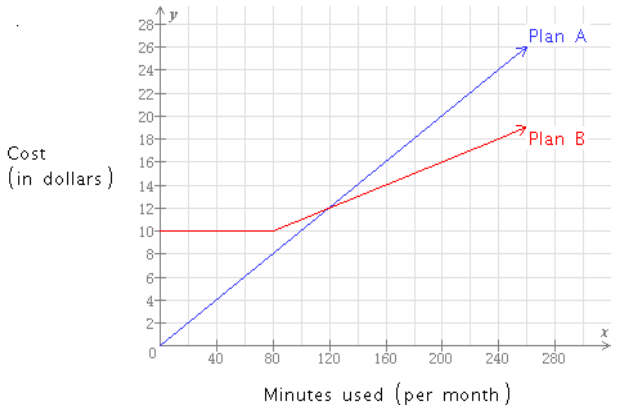
13. Sam can choose Plan A or Plan B for his long distance charges. For each plan, cost (in dollars) depends on minutes used (per month) as shown below.



a. If Sam makes 160 minutes of long distance calls for the month, which plan costs less? How much less does it cost than the other plan?

b. For what number of long distance minutes do the two plans cost the same? If the time spent on long distance calls is less than this amount, which plan costs less?

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