

ALEKS® Chapter 5 Exam #1

College Algebra / Math 1050

(Prof. Lindsay)

1. For each point in the table below, decide whether

it is on Line 1, Line 2, both, or neither.

Line 1: $-x - 5y = -29$

Line 2: $-9x - 5y = -21$

(x, y)	Line 1	Line 2	Both Lines	Neither Line
(4, 5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(-8, 2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(-1, 6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Solve the following system of equations.

$$\begin{cases} x^2 + y^2 = 21 \\ x^2 - y = 9 \end{cases}$$

2. The sum of two numbers is 42. One number is 2 times as large as the other. What are the numbers?

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

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

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

4. Graph the system below and write its solution.

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

5. The sum of three numbers is 85. The third number is 3 times the second. The second number is 5 less than the first. What are the numbers?

6. Solve the following system of equations.

$$-4x + 9y = 19$$

$$3x - 4y = -17$$

7. Solve the following system of equations.

$$x^2 + y^2 = 30$$

$$x - y^2 = -10$$

9. Dale will donate up to \$500 to charity. The money will be divided between two charities: the City Youth Fund and the Educational Growth Foundation. Dale would like to donate at least \$160 dollars to the Educational Growth Foundation. He would also like the amount donated to the Educational Growth Foundation to be at least twice the amount donated to the City Youth Fund. Let x denote the amount of money (in dollars) donated to the City Youth Fund. Let y denote the amount of money (in dollars) donated to the Educational Growth Foundation. Shade the region corresponding to all values of x and y that satisfy these requirements.

10. Justin is serving his kids french fries and chicken wings for lunch today. He wants the total calorie count from the french fries and chicken wings to be less than 600 calories. Each french fry has 33 calories, and each chicken wing has 121 calories. Write an inequality giving the number of french fries, f , and the number of chicken wings, c , that he can serve and still follow his calorie plan.

11. Find the maximum value of the function $z = 3x + 8y$ subject to the following constraints.

$$\begin{cases} x \geq 3 \\ y \geq 3 \\ 3x + 4y \leq 45 \end{cases}$$

12. A store has two types of animal feed available. Type A contains 9 pounds of oats and 1 pound of corn per bag. Type B contains 2 pounds of oats and 4 pounds of corn per bag. A farmer wants to combine the two types so that the resulting mixture has at least 46 pounds of oats and at least 24 pounds of corn. The store only has 12 bags of type A feed and 14 bags of type B feed in stock. Type A costs \$3 per bag, and type B costs \$4 per bag. How many bags of each type should the farmer buy to minimize his cost?

13. Kala wants to exercise for more than 30 minutes today. She plans to both run and swim. Each lap she runs takes her 1.4 minutes, and each lap she swims takes her 1.1 minutes. Letting r be the number of laps she runs and s be the number of laps she swims, write an inequality showing that Kala achieves her goal of more than 30 minutes of exercise.

14. Graph the inequality in the coordinate plane.

$$y < -5$$

15. A manufacturer produces two models of toy airplanes. It takes the manufacturer 32 minutes to assemble model A and 8 minutes to package it. It takes the manufacturer 20 minutes to assemble model B and 10 minutes to package it. In a given week, the total available time for assembling is 3200 minutes, and the total available time for packaging is 960 minutes. Model A earns a profit of \$10 for each unit sold and model B earns a profit of \$8 for each unit sold. Assuming the manufacturer is able to sell as many models as it makes, how many units of each model should be produced to maximize the profit for the given week?