

ALEKS® Matrices #1

College Algebra / MAT141 - Template (Prof. Porter)

Student Name/ID:

1. Use substitution to solve the system.

$$y = 3x - 4$$
$$4x + 3y = 27$$

$$x = \square$$

$$y = \square$$

2. Solve the following system of equations.

$$-4x + 9y = 19$$
$$3x - 4y = -17$$

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

$x + 5y = 5$ $-x - 5y = 5$	<p><input type="radio"/> The system has no solution</p> <p><input type="radio"/> The system has a unique solution: $(x, y) = (0, 0)$</p> <p><input type="radio"/> The system has infinitely many solutions. They must satisfy the following equation: $x = 0$</p>
$x + 3y = 3$ $-x - 3y = -3$	<p><input type="radio"/> The system has no solution</p> <p><input type="radio"/> The system has a unique solution: $(x, y) = (0, 0)$</p> <p><input type="radio"/> The system has infinitely many solutions. They must satisfy the following equation: $x = 0$</p>

4. Solve the system.

$$\begin{aligned}3x - y + z &= 3 \\ -x + y + 2z &= 0 \\ -5x + 3y + 2z &= -2\end{aligned}$$

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

Larger number:
Smaller number:

6. Two rainstorms occurred in one week in a certain area. In the first storm, 40 mL of rain fell per hour, and in the second storm, 25 mL of rain fell per hour. Rain lasted for a total of 55 hours, resulting in a total rainfall of 1825 mL . How long was each storm?

First storm:
Second storm:

7. A cyclist travels 22 mi in 2 hours going against the wind. She travels 42 mi with the wind in the same amount of time. What is the rate of the cyclist in still air and what is the rate of the wind?

Rate of the cyclist in still air: mi/h
Rate of the wind: mi/h

8. A scientist has two solutions, which she has labeled Solution A and Solution B. Each contains salt. She knows that Solution A is 45% salt and Solution B is 95% salt. She wants to obtain 80 ounces of a mixture that is 65% salt. How many ounces of each solution should she use?

Solution A:

Solution B:

9. Hong bought a desktop computer and a laptop computer. Before finance charges, the laptop cost \$400 less than the desktop. He paid for the computers using two different financing plans. For the desktop the interest rate was 7.5% per year, and for the laptop it was 8% per year. The total finance charges for one year were \$371. How much did each computer cost before finance charges?
10. 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?