Essential Question: Which algebraic methods can we use to solve a linear system?

Do Now: Consider the system: $-x + y = 3$
$2x + y = 6$

a) Which algebraic method (elimination or substitution) would you use? Be ready to justify your response.

b) Will both methods produce the same solution?

Solve each system using the <u>Elimination</u> method.

1) $2x + y = 6$
$x - 3y = -11$

2) $14y = 12 - 6x$
$2x + 6y = 4$

3) **Think About This!**
Consider the system below. Dana said that she can solve this system using elimination by multiplying the top equation by -2 and the bottom equation by 5.

Is she correct? Why?

Could Dana choose different multipliers and still eliminate a variable term? Explain.

$5x - 2y = 20$
$2x + 3y = 27$

Create a linear system to solve each problem below. Choose an algebraic method (substitution or elimination) to solve your system.

4) Two small pitchers and one large pitcher can hold 8 cups of water. One large pitcher minus one small pitcher can hold 2 cups of water. How many cups of water can each pitcher hold?

5) Pam has two part time jobs. At one job, she works as a cashier and makes $8 per hour. At the second job, she works as a tutor and makes $12 per hour. One week she worked 30 hours and made $268. How many hours did she spend at each job?

6) The sum of two angles is 90°. The difference between twice the larger angle and the smaller angle is 105°. Find the measures of the two angles.

Solve each system of linear equations using the elimination method.

1) $3x + 3y = 12$ $6x + 11y = 14$	2) $3x + 8y = 17$ $-2x + 9y = 3$

Use a linear system to solve each problem below. Use any algebraic method to solve.

3) Roses cost $2.50 each and lilies cost $1.75 each. Ellis spent $24.75 for 12 of the flowers. How many of each type of flower did he buy?

4) Bright Pools is building a rectangular pool at a new house. The perimeter of the pool has to be 94 feet, and the length has to be 2 feet more than twice the width. What will be the length and width of the pool?