Goal: To solve a system of equations algebraically.

Review:

On our previous notes, we solved the following system by graphing. Remember, solving a system means finding the value of *both* variables that satisfy both equations. However, in the system below, we already know that $y = 1$. Thus, we can substitute the value from the first equation into the second equation. Do so and solve this system.

$y = 1$
$3x + 4y = 16$

Solve the system by substitution. Check your solution algebraically and by calculator.

Steps to solve a liner system by substitution	Example 1 $-x + y = 1$ $2x + y = -2$	Practice 1 $u - v = 8$ $7u + v = 0$
1. Solve for one variable in one equation		
2. Substitute expression from #1 into other equation; solve for remaining variable		
3. Substitute value from #3 into equation from #1; solve for remaining variable		
4. Check solution	$-x + y = 1$ $2x + y = -2$	$u - v = 8$ $7u + v = 0$

Practice

2. $2x + 2y = 3$
$x - 4y = -1$

3. $-3w + z = 6$
$-3w - 5z = 11$

Application

Example 2: Suppose you bought eight oranges and one grapefruit for a total of $4.60. Later that day, you bought six oranges and three grapefruits for a total of $4.80. What is the price of each type of fruit?

Practice: Your great uncle Hafiz has $74 dollars in his piggy bank, some of which are $1 bills and the rest are $5 bills. He has a total of 30 bills. How many of each bill does he have?