

1) Solutions to Test 2 #4:

	Actual number of shares
Value of Stock	2x
Value of Bond	3x
Total:	\$123,450

$$2x + 3x = 123,450$$

$$5x = 123,450$$

$$x = 24,690$$

$$\begin{aligned} \text{Value of Stocks} &= 2 (24,690) \\ &= \$49,380 \end{aligned}$$

$$\begin{aligned} \text{Value of Bonds} &= 3 (24,690) \\ &= \$ 74,070 \end{aligned}$$

2) Different scenarios for solving system of equations.

Scenario 1: If there is a single x or y term, then Method of Substitution will work really well.

Ex: Solve the system of equations

$$\begin{cases} x - 2y = 7 \\ 3x + 4y = 1 \end{cases}$$

$$x = 7 + 2y$$

$$3(7 + 2y) + 4y = 1$$

$$21 + 6y + 4y = 1$$

$$21 + 10y = 1$$

$$10y = -20$$

$$y = -2$$

$$x = 7 + 2(-2)$$

$$x = 7 - 4$$

$$x = 3$$

$$(x, y) = (3, -2)$$

Scenario 2: If there is a coefficient in front of both x and y then we can use Method of Elimination.

Ex:

$$\begin{cases} 3x + 4y = 29 \\ 2x - 5y = 19 \end{cases}$$

$$2(3x + 4y = 29)$$

$$3(2x - 5y = 19)$$

$$6x + 8y = 58$$

$$6x - 15y = 57$$

*Subtract the two equations:*

$$23y = 115$$

$$y = 5$$

$$3x + 4(5) = 29$$

$$3x = 29 - 20$$

$$3x = 9$$

$$x = 3$$

$$(x, y) = (3, 5)$$

Alternative solution:

$$\begin{cases} 3x + 4y = 29 \\ 2x - 5y = 19 \end{cases}$$

$$5(3x + 4y = 29)$$

$$4(2x - 5y = 19)$$

$$15x + 20y = 145$$

$$8x - 20y = 76$$

*Add the two equations:*

$$23x = 69$$

$$x = 3$$

$$3(3) + 4y = 29$$

$$4y = 29 - 9$$

$$4y = 20$$

$$y = 5$$

$$(x, y) = (3, 5)$$

For students who has trouble deciding whether to add or subtract when using Method of Elimination, there is an alternative method.

Start off just like Method of Elimination:

$$\begin{cases} 3x + 4y = 29 \\ 2x - 5y = 19 \end{cases}$$

$$2(3x + 4y = 29)$$

$$3(2x - 5y = 19)$$

$$6x + 8y = 58$$

$$6x - 15y = 57$$

*Isolate the 6x:*

$$6x = 58 - 8y$$

$$6x = 57 + 15y$$

*By substitution we will get,*

$$58 - 8y = 57 + 15y$$

$$8y - 15y = 57 - 58$$

$$-7y = -1$$

$$y = 5$$

*Then solve for x.*