**1 (a) and 1 (b)**

1 a) $X_1$ = units of hand bags of seed
$X_2$ = units of serrated bags of seed

- Linear

$$\text{Max } 275.75x_1 + 120.50x_2$$
$$\text{S.t. } 100.05x_1 + 60.75x_2 \leq 810.50$$
$$5.50x_1 + 10.25x_2 \leq 655.80$$
$$75.80x_1 + 24.84x_2 \leq 520.75$$
$$x_1, x_2 \geq 0$$

Standard Form

$$\text{Max } 275.75x_1 + 120.50x_2$$
$$\text{S.t. } 100.05x_1 + 60.75x_2 + S_1 = 810.50$$
$$5.50x_1 + 10.25x_2 + S_2 = 655.80$$
$$75.30x_1 + 24.84x_2 + S_3 = 520.75$$
$$x_1, x_2, S_1, S_2, S_3 \geq 0$$

1 b) Using my graph from assignment two, there are 3 extreme points within the feasible region. (intersection of lines of constraints)

Basic: $S_1 = 810.50$, $S_2 = 655.80$, $S_3 = 520.75$

feasible: 3

**1 (c)**

## Assignment 3, Problem 1(c) | Daniel Carpenter

| Objective Function | 275.75 | 120.50 |
|---|---|---|

### Setup Basic Vars

| | | is Basic |
|---|---|---|
| s1 | (34,099) | TRUE |
| s2 | (2,096) | TRUE |
| s3 | (23,236) | TRUE |

### Calculations

| Basis | z | x1 | x2 | s1 | s2 | s3 | Solution | Ratio |
|---|---|---|---|---|---|---|---|---|
| s1 | 0 | 100.05 | 60.75 | 1.00 | 0 | 0 | 810.50 | 8.10 |
| s2 | 0 | 5.50 | 10.25 | 0 | 1.00 | 0 | 655.80 | 119.24 |
| s3 | 0 | 75.30 | 24.84 | 0 | 0 | 1.00 | 520.75 | 6.92 |
| z | 1.00 | -275.75 | -120.50 | 0 | 0 | 0 | 0 | |

*Iteration 2: s3 leaves basis, x1 enters basis*

| Basis | z | x1 | x2 | s1 | s2 | s3 | Solution | Calculation | Ratio |
|---|---|---|---|---|---|---|---|---|---|
| s1 | 0 | 0 | 27.75 | 1.00 | 0 | -1.33 | 118.59 | =-$D16 * I$26 + I16 | 4.27 |
| s2 | 0 | 0 | 8.44 | 0 | 1.00 | -0.07 | 617.76 | =-$D17 * I$26 + I17 | 73.23 |
| x1 | 0 | 1.00 | 0.33 | 0 | 0 | 0.01 | 6.92 | =I18 / $D18 | 20.96 |
| z | 1.00 | 0 | -29.54 | 0 | 0 | 3.66 | 1,907.00 | =-$D19 * I$26 + I19 | |

*Iteration 2: s1 leaves basis, x2 enters basis*

| Basis | z | x1 | x2 | s1 | s2 | s3 | Solution | Calculation |
|---|---|---|---|---|---|---|---|---|
| x2 | 0 | 0 | 1.00 | 0.04 | 0 | -0.05 | 4.27 | =I24 / $E24 |
| s2 | 0 | 0 | 0 | -0.30 | 1.00 | 0.33 | 581.71 | =I25 - $E25 * I$31 |
| x1 | 0 | 1.00 | 0 | -0.01 | 0 | 0.03 | 5.51 | =I26 - $E26 * I$31 |
| z | 1.00 | 0 | 0 | 1.06 | 0 | 2.25 | 2,033.23 | =I27 - $E27 * I$31 |

**Final Note**

Since all variables contained in z's equation are negative (except z itself), we have arrived at the optimal solution.

Solution 2,033.23399 =I34

## 2 (a)

### i. Initialization of Basic Variables

*Iteration 0: Setup*

| Basic | z | x1 | x2 | s1 | s2 | s3 | s4 | s5 | Solution |
|---|---|---|---|---|---|---|---|---|---|
| s1 | 0 | 0.30 | 0.40 | -1.00 | 0 | 0 | 0 | 0 | 2,000.00 |
| s2 | 0 | 0.40 | 0.20 | 0 | -1.00 | 0 | 0 | 0 | 1,500.00 |
| s3 | 0 | 0.20 | 0.30 | 0 | 0 | -1.00 | 0 | 0 | 500.00 |
| x1 | 0 | 1.00 | 0 | 0 | 0 | 0 | 1.00 | 0 | 9,000.00 |
| x2 | 0 | 0 | 1.00 | 0 | 0 | 0 | 0 | 1.00 | 6,000.00 |
| z | 1.00 | -20.00 | -15.00 | 0 | 0 | 0 | 0 | 0 | 0 |

*Iteration 1: Make s1, s2, and s3 identity*

| Basic | z | x1 | x2 | s1 | s2 | s3 | s4 | s5 | Solution | Calculation |
|---|---|---|---|---|---|---|---|---|---|---|
| s1 | 0 | -0.30 | -0.40 | 1.00 | 0 | 0 | 0 | 0 | -2,000.00 | =K27 * $F$27 |
| s2 | 0 | -0.40 | -0.20 | 0 | 1.00 | 0 | 0 | 0 | -1,500.00 | =K28 * $G$28 |
| s3 | 0 | -0.20 | -0.30 | 0 | 0 | 1.00 | 0 | 0 | -500.00 | =K29 * $H$29 |
| x1 | 0 | 1.00 | 0 | 0 | 0 | 0 | 1.00 | 0 | 9,000.00 | |
| x2 | 0 | 0 | 1.00 | 0 | 0 | 0 | 0 | 1.00 | 6,000.00 | |
| z | 1.00 | -20.00 | -15.00 | 0 | 0 | 0 | 0 | 0 | 0 | |

*Iteration 2: Make x1 identity*

| Basic | z | x1 | x2 | s1 | s2 | s3 | s4 | s5 | Solution | Calculation |
|---|---|---|---|---|---|---|---|---|---|---|
| s1 | 0 | 0 | -0.40 | 1.00 | 0 | 0 | 0.30 | 0 | 700.00 | =K36 - $D36 * K$48 |
| s2 | 0 | 0 | -0.20 | 0 | 1.00 | 0 | 0.40 | 0 | 2,100.00 | =K37 - $D37 * K$48 |
| s3 | 0 | 0 | -0.30 | 0 | 0 | 1.00 | 0.20 | 0 | 1,300.00 | =K38 - $D38 * K$48 |
| x1 | 0 | 1.00 | 0 | 0 | 0 | 0 | 1.00 | 0 | 9,000.00 | |
| x2 | 0 | 0 | 1.00 | 0 | 0 | 0 | 0 | 1.00 | 6,000.00 | =K40 - $D40 * K$48 |
| z | 1.00 | 0 | -15.00 | 0 | 0 | 0 | 20.00 | 0 | 180,000.00 | =K41 - $D41 * K$48 |

*Iteration 3: Make x2 identity*

| Basic | z | x1 | x2 | s1 | s2 | s3 | s4 | s5 | Solution | Calculation | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|
| s1 | 0 | 0 | 0 | 1.00 | 0 | 0 | 0.30 | 0.40 | 3,100.00 | =K45 - $E45 * K$58 | 10,333.33 |
| s2 | 0 | 0 | 0 | 0 | 1.00 | 0 | 0.40 | 0.20 | 3,300.00 | =K46 - $E46 * K$58 | 8,250.00 |
| s3 | 0 | 0 | 0 | 0 | 0 | 1.00 | 0.20 | 0.30 | 3,100.00 | =K47 - $E47 * K$58 | 15,500.00 |
| x1 | 0 | 1.00 | 0 | 0 | 0 | 0 | 1.00 | 0 | 9,000.00 | =K48 - $E48 * K$58 | 9,000.00 |
| x2 | 0 | 0 | 1.00 | 0 | 0 | 0 | 0 | 1.00 | 6,000.00 | | |
| z | 1.00 | 0 | 0 | 0 | 0 | 0 | 20.00 | 15.00 | 270,000.00 | =K50 - $E50 * K$58 | |

### ii. Optimize (*see last step for min ratio used in iteration 4*)

*Iteration 4: s2 leaves basis, and now s4 apart of basis*

| Basic | z | x1 | x2 | s1 | s2 | s3 | s4 | s5 | Solution | Calculation | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|
| s1 | 0 | 0 | 0 | 1.00 | -0.75 | 0 | 0 | 0.25 | 625.00 | =K54 - $I54 * K$66 | 2,500.00 |
| s4 | 0 | 0 | 0 | 0 | 2.50 | 0 | 1.00 | 0.50 | 8,250.00 | =K55 / $I55 | 16,500.00 |
| s3 | 0 | 0 | 0 | 0 | -0.50 | 1.00 | 0 | 0.20 | 1,450.00 | =K56 - $I56 * K$66 | 7,250.00 |
| x1 | 0 | 1.00 | 0 | 0 | -2.50 | 0 | 0 | -0.50 | 750.00 | =K57 - $I57 * K$66 | |
| x2 | 0 | 0 | 1.00 | 0 | 0 | 0 | 0 | 1.00 | 6,000.00 | =K58 - $I58 * K$66 | 6,000.00 |
| z | 1.00 | 0 | 0 | 0 | -50.00 | 0 | 0 | 5.00 | 105,000.00 | =K59 - $I59 * K$66 | |

*Iteration 4: s1 leaves basis, and now s5 apart of basis*

| Basic | z | x1 | x2 | s1 | s2 | s3 | s4 | s5 | Solution | Calculation |
|---|---|---|---|---|---|---|---|---|---|---|
| s5 | 0 | 0 | 0 | 4.00 | -3.00 | 0 | 0 | 1.00 | 2,500.00 | =K65 / $J$65 |
| s4 | 0 | 0 | 0 | -2.00 | 4.00 | 0 | 1.00 | 0 | 7,000.00 | =K66 - $J66 * K$74 |
| s3 | 0 | 0 | 0 | -0.80 | 0.10 | 1.00 | 0 | 0 | 950.00 | =K67 - $J67 * K$74 |
| x1 | 0 | 1.00 | 0 | 2.00 | -4.00 | 0 | 0 | 0 | 2,000.00 | =K68 - $J68 * K$74 |
| x2 | 0 | 0 | 1.00 | -4.00 | 3.00 | 0 | 0 | 0 | 3,500.00 | =K69 - $J69 * K$74 |
| z | 1.00 | 0 | 0 | -20.00 | -35.00 | 0 | 0 | 0 | 92,500.00 | =K70 - $J70 * K$74 |

**Final Note**

Since all variables contained in z's equation are negative (except z itself), we have arrived at the optimal solution.

Optimal Profit ($): 92,500 =K79

## 2(b)

Assignment 3, Problem 2(b) | Daniel Carpenter

*ITER 1: Setup*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | 0 | 0.300 | 0.400 | -1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | 0 | 2,000.00 | 5,000.00 |
| R2 | 0 | 0.400 | 0.200 | 0 | -1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | 1,500.00 | 7,500.00 |
| R3 | 0 | 0.200 | 0.300 | 0 | 0 | -1.000 | 0 | 0 | 0 | 0 | 1.000 | 500.00 | 1,666.67 |
| S4 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | 0 | 0 | 0 | 9,000.00 | |
| S5 | 0 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | 0 | 0 | 6,000.00 | 6,000.00 |
| *Z* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | M | M | M | 0 | |

*ITER 2: R3 leaves basis, x2 enters*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | Calculation | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | 0 | 0.033 | 0 | -1.000 | 0 | 1.333 | 0 | 0 | 1.000 | 0 | | 1,333.33 | =N6 - $E6 * N$18 | 1,000.00 |
| R2 | 0 | 0.267 | 0 | 0 | -1.000 | 0.667 | 0 | 0 | 0 | 1.000 | | 1,166.67 | =N7 - $E7 * N$18 | 1,750.00 |
| x2 | 0 | 0.667 | 1.000 | 0 | 0 | -3.333 | 0 | 0 | 0 | 0 | | 1,666.67 | =N8 / $E8 | |
| S4 | | 1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | 0 | 0 | | 9,000.00 | =N9 - $E9 * N$18 | |
| S5 | 0 | -0.667 | 0 | 0 | 0 | 3.333 | 0 | 1.000 | 0 | 0 | | 4,333.33 | =N10 - $E10 * N$18 | 1,300.00 |
| *Z* | 1 | 0.3M+10 | 15.000 | -M | -M | 2M-50 | 0 | 0 | M | M | | 0 | | |

*ITER 3: R5 leaves basis, s1 enters*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | Calculation | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S3 | 0 | 0.025 | 0 | -0.750 | 0 | 1.000 | 0 | 0 | | 0 | | 1,000.00 | =N16 / $H16 | |
| R2 | 0 | 0.250 | 0 | 0.500 | -1.000 | 0 | 0 | 0 | | 1.000 | | 500.00 | =N17 - $H17 * N$25 | 1,000.00 |
| x2 | 0 | 0.750 | 1.000 | -2.500 | 0 | 0 | 0 | 0 | | 0 | | 5,000.00 | =N18 - $H18 * N$25 | |
| S4 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | | 0 | | 9,000.00 | =N19 - $H19 * N$25 | |
| S5 | 0 | -0.750 | 0 | 2.500 | 0 | 0 | 0 | 1.000 | | 0 | | 1,000.00 | =N20 - $H20 * N$25 | 400.00 |
| *Z* | 1 | 0.25M+11.25 | 15.000 | 0.5M-37.5 | -M | 0 | 0 | 0 | | M | | 0 | | |

*ITER 4: R2 leaves basis, x1 enters*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | Calculation | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S3 | 0 | -0.200 | 0 | 0 | 0 | 1.000 | 0 | 0.300 | | 0 | | 1,300.00 | =N25 - $F25 * N$38 | |
| x1 | 0 | 0.400 | 0 | 0 | -1.000 | 0 | 0 | -0.200 | | 1.000 | | 300.00 | =N26 - $F26 * N$38 | 750.00 |
| x2 | 0 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | | 0 | | 6,000.00 | =N27 - $F27 * N$38 | |
| S4 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | | 0 | | 9,000.00 | =N28 - $F28 * N$38 | 9,000.00 |
| S5 | 0 | -0.300 | 0 | 1.000 | 0 | 0 | 0 | 0.400 | | 0 | | 400.00 | =N29 / $F$29 | |
| *Z* | 1 | 0.4M | 15.000 | 0 | -M | 0 | 0 | -0.2M+15 | | M | | 0 | | |

*ITER 5: S1 leaves basis, s5 enters*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | Calculation | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S3 | 0 | 0 | 0 | 0 | -0.500 | 1.000 | 0 | 0.200 | | | | 1,450.00 | =N34 - $D34 * N$44 | 7,250.00 |
| x1 | 0 | 1.000 | 0 | 0 | -2.500 | 0 | 0 | -0.500 | | | | 750.00 | =N35 / $D35 | |
| x2 | 0 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | | | | 6,000.00 | =N36 - $D36 * N$44 | 6,000.00 |
| S4 | 0 | 0 | 0 | 0 | 2.500 | 0 | 1.000 | 0.500 | | | | 8,250.00 | =N37 - $D37 * N$44 | 16,500.00 |
| s1 | 0 | 0 | 0 | 1.000 | -0.750 | 0 | 0 | 0.250 | | | | 625.00 | =N38 - $D38 * N$44 | 2,500.00 |
| *Z* | 1 | 20.000 | 15.000 | 0 | -50.000 | 0 | 0 | 5.000 | | | | 105,000.00 | =(N44 * D48) + (N45 * E48) | |

**Final Note**

Initial basic solution achieved.

## 2(c)

Assignment 3, Problem 2(c) | Daniel Carpenter

*ITER 1: Setup*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | 0 | 0.300 | 0.400 | -1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | 0 | 2,000.00 | 5,000.00 |
| R2 | 0 | 0.400 | 0.200 | 0 | -1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | 1,500.00 | 7,500.00 |
| R3 | 0 | 0.200 | 0.300 | 0 | 0 | -1.000 | 0 | 0 | 0 | 0 | 1.000 | 500.00 | 1,666.67 |
| S4 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | 0 | 0 | 0 | 9,000.00 | |
| S5 | 0 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | 0 | 0 | 6,000.00 | 6,000.00 |
| *Z* | 1 | 0.900 | 0.900 | -1.000 | -1.000 | -1.000 | 0 | 0 | 1.000 | 1.000 | 1.000 | 0 | |

*ITER 2: R3 leaves basis, x2 enters*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | *Calculation* | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R1 | 0 | 0.033 | 0 | -1.000 | 0 | 1.333 | 0 | 0 | 1.000 | 0 | | 1,333.33 | *=N6 - $E6 * N$18* | 1,000.00 |
| R2 | 0 | 0.267 | 0 | 0 | -1.000 | 0.667 | 0 | 0 | 0 | 1.000 | | 1,166.67 | *=N7 - $E7 * N$18* | 1,750.00 |
| x2 | 0 | 0.667 | 1.000 | 0 | 0 | -3.333 | 0 | 0 | 0 | 0 | | 1,666.67 | *=N8 / $E8* | |
| S4 | | 1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | 0 | 0 | | 9,000.00 | *=N9 - $E9 * N$18* | |
| S5 | 0 | -0.667 | 0 | 0 | 0 | 3.333 | 0 | 1.000 | 0 | 0 | | 4,333.33 | *=N10 - $E10 * N$18* | 1,300.00 |
| *Z* | 0 | 0.300 | 0 | -1.000 | -1.000 | 2.000 | 0 | 0 | 1.000 | 1.000 | | -1,500.00 | | |

*ITER 3: R5 leaves basis, s1 enters*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | *Calculation* | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S3 | 0 | 0.025 | 0 | -0.750 | 0 | 1.000 | 0 | 0 | | 0 | | 1,000.00 | *=N16 / $H16* | |
| R2 | 0 | 0.250 | 0 | 0.500 | -1.000 | 0 | 0 | 0 | | 1.000 | | 500.00 | *=N17 - $H17 * N$25* | 1,000.00 |
| x2 | 0 | 0.750 | 1.000 | -2.500 | 0 | 0 | 0 | 0 | | 0 | | 5,000.00 | *=N18 - $H18 * N$25* | |
| S4 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | | 0 | | 9,000.00 | *=N19 - $H19 * N$25* | |
| S5 | 0 | -0.750 | 0 | 2.500 | 0 | 0 | 0 | 1.000 | | 0 | | 1,000.00 | *=N20 - $H20 * N$25* | 400.00 |
| *Z* | 0 | 0.250 | 0 | 0.500 | -1.000 | 0 | 0 | 0 | | 1.000 | | -3,500.00 | | |

*ITER 4: R2 leaves basis, x1 enters*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | *Calculation* | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S3 | 0 | -0.200 | 0 | 0 | 0 | 1.000 | 0 | 0.300 | | 0 | | 1,300.00 | *=N25 - $F25 * N$38* | |
| x1 | 0 | 0.400 | 0 | 0 | -1.000 | 0 | 0 | -0.200 | | 1.000 | | 300.00 | *=N26 - $F26 * N$38* | 750.00 |
| x2 | 0 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | | 0 | | 6,000.00 | *=N27 - $F27 * N$38* | |
| S4 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | 0 | | 0 | | 9,000.00 | *=N28 - $F28 * N$38* | 9,000.00 |
| S5 | 0 | -0.300 | 0 | 1.000 | 0 | 0 | 0 | 0.400 | | 0 | | 400.00 | *=N29 / $F$29* | |
| *Z* | 0 | 0.400 | 0 | 0 | -1.000 | 0 | 0 | -0.200 | | 1.000 | | -3,700.00 | | |

*ITER 5: S1 leaves basis, s5 enters*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | *Calculation* | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S3 | 0 | 0 | 0 | 0 | -0.500 | 1.000 | 0 | 0.200 | | | | 1,450.00 | *=N34 - $D34 * N$44* | 7,250.00 |
| x1 | 0 | 1.000 | 0 | 0 | -2.500 | 0 | 0 | -0.500 | | | | 750.00 | *=N35 / $D35* | |
| x2 | 0 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | | | | 6,000.00 | *=N36 - $D36 * N$44* | 6,000.00 |
| S4 | 0 | 0 | 0 | 0 | 2.500 | 0 | 1.000 | 0.500 | | | | 8,250.00 | *=N37 - $D37 * N$44* | 16,500.00 |
| s1 | 0 | 0 | 0 | 1.000 | -0.750 | 0 | 0 | 0.250 | | | | 625.00 | *=N38 - $D38 * N$44* | 2,500.00 |
| *Z* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | -4,000.00 | *=N39 - $D39 * N$44* | |

**Final Note**

Initial basic solution achieved.

## 2(d)

Assignment 3, Problem 2(d) | Daniel Carpenter

*--> Iter 5 from Problem 2(b) <--*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | Calculation | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S3 | 0 | 0 | 0 | 0 | -0.500 | 1.000 | 0 | 0.200 | | | | 1,450.00 | ='2(b)'!N43 | 7,250.00 |
| x1 | 0 | 1.000 | 0 | 0 | -2.500 | 0 | 0 | -0.500 | | | | 750.00 | ='2(b)'!N44 | |
| x2 | 0 | 0 | 1.000 | 0 | 0 | 0 | 0 | 1.000 | | | | 6,000.00 | ='2(b)'!N45 | 6,000.00 |
| S4 | 0 | 0 | 0 | 0 | 2.500 | 0 | 1.000 | 0.500 | | | | 8,250.00 | ='2(b)'!N46 | 16,500.00 |
| s1 | 0 | 0 | 0 | 1.000 | -0.750 | 0 | 0 | 0.250 | | | | 625.00 | ='2(b)'!N47 | 2,500.00 |
| *Z* | 1 | 20.000 | 15.000 | 0 | -50.000 | 0 | 0 | 5.000 | | | | 105,000.00 | ='2(b)'!N48 | |

*ITER 6: S1 leaves, s5 enters*

| Basis | z | x1 | x2 | S1 | S2 | S3 | S4 | S5 | R1 | R2 | R3 | Solution | Calculation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S3 | 0 | 0 | 0 | -0.800 | 0.100 | 1.000 | 0 | 0 | | | | 950.00 | =N6 - $J6 * N$20 |
| x1 | 0 | 1.000 | 0 | 2.000 | -4.000 | 0 | 0 | 0 | | | | 2,000.00 | =N7 - $J7 * N$20 |
| x2 | 0 | 0 | 1.000 | -4.000 | 3.000 | 0 | 0 | 0 | | | | 3,500.00 | =N8 - $J8 * N$20 |
| S4 | 0 | 0 | 0 | -2.000 | 4.000 | 0 | 1.000 | 0 | | | | 7,000.00 | =N9 - $J9 * N$20 |
| s5 | 0 | 0 | 0 | 4.000 | -3.000 | 0 | 0 | 1.000 | | | | 2,500.00 | =N10 / $J10 |
| *Z* | 1 | 20.000 | 15.000 | -20.000 | -35.000 | 0 | 0 | 0 | | | | 92,500.00 | =N11 - $J11 * N$20 |

**Final Note**

Since all variables contained in z's equation are negative (except z itself), we have arrived at the optimal solution.

Minimized Cost ($): 92,500 =N21