Name: _____

MA162
Section: _____
Date: 2010-02-25

Activity 4.1a: Setting up the table

1. Write down the table associated to the linear programming problem: Maximize $P = 3x + 4y$ subject to $x + y \leq 4$, $2x + y \leq 5$, $x \geq 0$, $y \geq 0$.

x	y	u	v	P	RHS

2. Write down the linear programming problem associated to the table:

x	y	u	v	P	RHS
5	6	1	0	0	20
9	7	0	1	0	25
-4	-8	0	0	1	0

Maximize: _____ subject to _____.

3. Write down the table associated to the linear programming problem: Maximize $P = 3x + 4u$ subject to $x + u \leq 4$, $2x + u \leq 5$, $x \geq 0$, $u \geq 0$.

x	y	u	v	P	RHS

4. Write down the linear programming problem associated to the table:

x	y	u	v	P	RHS
5	1	6	0	0	20
9	0	7	1	0	25
-4	0	-8	0	1	0

Maximize: _____ subject to _____.

Activity 4.1b: Pivoting

Circle the pivot column, then find the ratios, and then circle the pivot row (Sec 4.1, ex#11, p. 238):

x	y	u	v	P	RHS	
1	1	1	0	0	4	Ratio:_____
2	1	0	1	0	5	Ratio:_____
-3	-4	0	0	1	0	

Carry out the row operations: First row operation is: _____

x	y	u	v	P	RHS

Second and third row operations are: _____

x	y	u	v	P	RHS

Activity 4.1c: Reading the answer

Read the basic solution from the table (Sec. 4.1, ex#1, p. 237):

x	y	u	v	P	RHS
0	1	$\frac{5}{7}$	$-\frac{1}{7}$	0	$\frac{20}{7}$
1	0	$-\frac{3}{7}$	$\frac{2}{7}$	0	$\frac{30}{7}$
0	0	$\frac{13}{7}$	$\frac{3}{7}$	1	$\frac{220}{7}$

Decision: ($x =$ _____, $y =$ _____)

Result: $P =$ _____

Slack: ($u =$ _____, $v =$ _____)

Read the basic solution from the table (Sec. 4.1, like ex#3, p. 237):

x	y	u	v	P	RHS
0	2	1	-2	0	2
1	2	0	2	0	4
0	-2	0	6	1	48

Decision: ($x =$ _____, $y =$ _____)

Result: $P =$ _____

Slack: ($u =$ _____, $v =$ _____)

Adjusting: If we don't set the free variables to zero, what is the profit function? $P =$ _____

Which variable should we increase? _____

Read the basic solution from the table (Sec 4.1, like ex#7, p. 238):

x	y	z	s	t	u	v	P	RHS
1	0	0	2	0	-1	-2	0	6
0	0	0	-1	1	5	4	0	7
0	0	1	4	0	3	2	0	8
0	1	0	3	0	2	4	0	9
0	0	0	72	0	8	7	1	4920

Decision: ($x =$ _____, $y =$ _____, $z =$ _____)

Result: $P =$ _____

Slack: ($s =$ _____, $t =$ _____, $u =$ _____, $v =$ _____)

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Quiz on 4.1: Simplex algorithm

Setup the table: Maximize $P = 6x + 3y$ subject to $x + y \leq 10$, $2x + y \leq 15$, $x \geq 0$, $y \geq 0$.

x	y	u	v	P	RHS

Do one complete pivot step (step 2):

x	y	u	v	P	RHS

Read the answer:

Decision: $(x =$ _____, $y =$ _____$)$

Result: $P =$ _____

Slack: $(u =$ _____, $v =$ _____$)$