Linear Programming Guide Name: Ch 5.6 Hour: _____

Problem Number ~~#~~ 90

	# 32-inch	# 48-inch	
	x	y	
Assembly	3	5	≤ 3900
Cabinet	1	3	≤ 2100
Test	2	2	≤ 2200
	\$100	\$150	

a) Identify the variables.

X =

Y =

b) What are we trying to maximize/minimize?

profit

c) Objective Function (max/min?)

$100x + 150y$

d) List all the Constraints (inequalities)

$x \geq 0$ $y \geq 0$

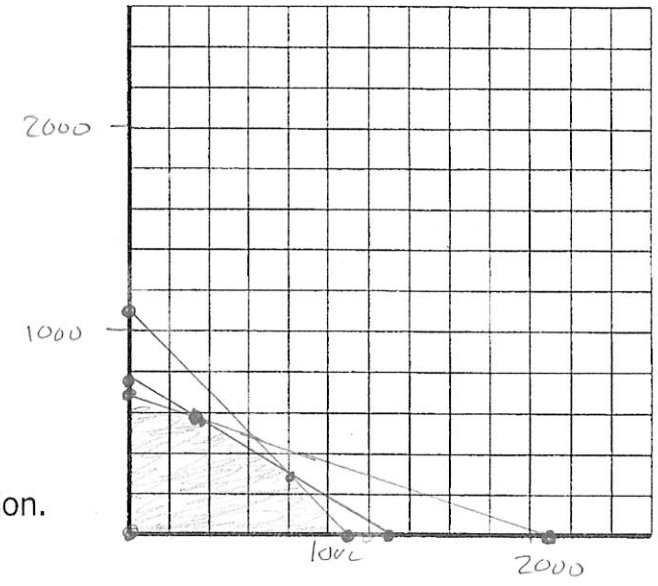
x	y
2100	0
0	700

★ $3x + 5y \leq 3900$ → | x | y | 1300 | 0 | 0 | 780 |

$1x + 3y \leq 2100$

$2x + 2y \leq 2200$ → | x | y | 1100 | 0 | 0 | 1100 |

e) Graph all inequalities creating a Feasible Region.



f) List the vertices of the Feasible Region.

(0,0) (1100,0) (800,300) (300,600) (0,700)

g) Give the value of the Objective Function at each vertex.

$100x + 150y$

(0,0) = $100(0) + 150(0) = 0$

(1100,0) = $100(1100) + 150(0) = 110{,}000$

(800,300) = $100(800) + 150(300) = 125{,}000$

(300,600) = $100(300) + 150(600) = 120{,}000$

(0,700) = $100(0) + 150(700) = 105{,}000$

$3x + 5y = 3900$

$-3x - 9y = -6300$

$-4y = -2400$

$-4 \quad -4$

$y = 600$

$x + 3(600) = 2100$

$x + 1800 = 2100$

$-1800 \quad -1800$

$x = 300$

h) Answer the question.

Max profit \$125,000 for 800 32-inch TVs and 300 48-inch TVs.

$2(3x + 5y = 3900) \rightarrow 6x + 10y = 7800$

$-3(2x + 2y = 2200) \quad -6x - 6y = -6600$

$\frac{4y}{4} = \frac{1200}{4}$

$y = 300$

$2x + 2(300) = 2200 \rightarrow x = 800$