

Problem Number 5.6 Ex 4a

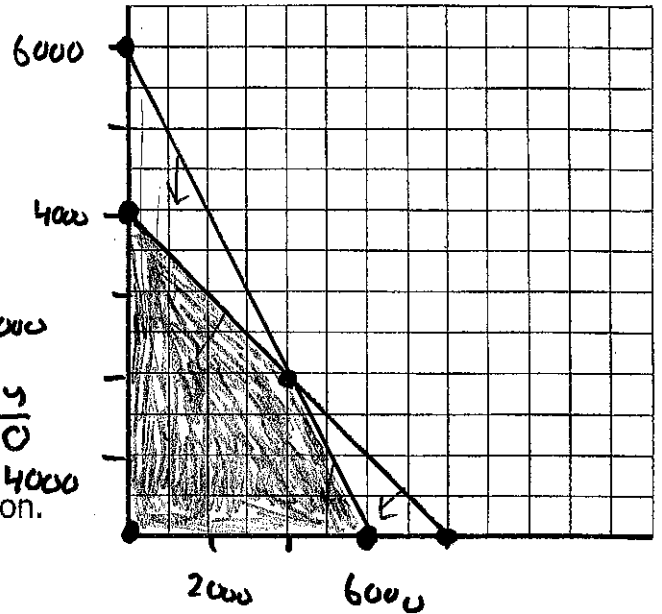
	med kit x	H ₂ O y	
Volume	1	1	≤ 6000
Weight	10	20	≤ 80,000
	<u>6</u>	<u>10</u>	

- a) Identify the variables.
 X = # medical kits
 Y = # water containers

- b) What are we trying to maximize/minimize?
 # people served

- c) Objective Function (max/min?)
 $6x + 10y$

- d) List all the Constraints (inequalities)
- $$x \geq 0 \quad y \geq 0$$
- $$1x + 1y \leq 6000$$
- $$10x + 20y \leq 80,000 \rightarrow \begin{array}{l} x \quad y \\ 8000 \quad 0 \\ 0 \quad 4000 \end{array}$$



- e) Graph all inequalities creating a Feasible Region.

- f) List the vertices of the Feasible Region.
 (0,0) (6000,0) (4000,2000)
 (0,4000)

- g) Give the value of the Objective Function at each vertex.
- $$(0,0) = 0 + 0 = 0$$
- $$(6000,0) = 6(6000) + 0 = 36,000$$
- $$(4000,2000) = 6(4000) + 10(2000) = 44,000$$
- $$(0,4000) = 6(0) + 10(4000) = 40,000$$
- $$(\quad, \quad) =$$

$$-10(x + y = 6000)$$

$$\begin{array}{r} 10x + 20y = 80,000 \\ -10x - 10y = -60,000 \\ \hline \end{array}$$

$$\frac{10y}{10} = \frac{20,000}{10}$$

$$y = 2000$$

$$x + y = 6000$$

$$\begin{array}{r} x + 2000 = 6000 \\ -2000 \quad -2000 \\ \hline \end{array}$$

$$x = 4000$$

- h) Answer the question.

Max number of victims served
 is 44,000 with 4000 medical
kits and 2000 containers of
water.