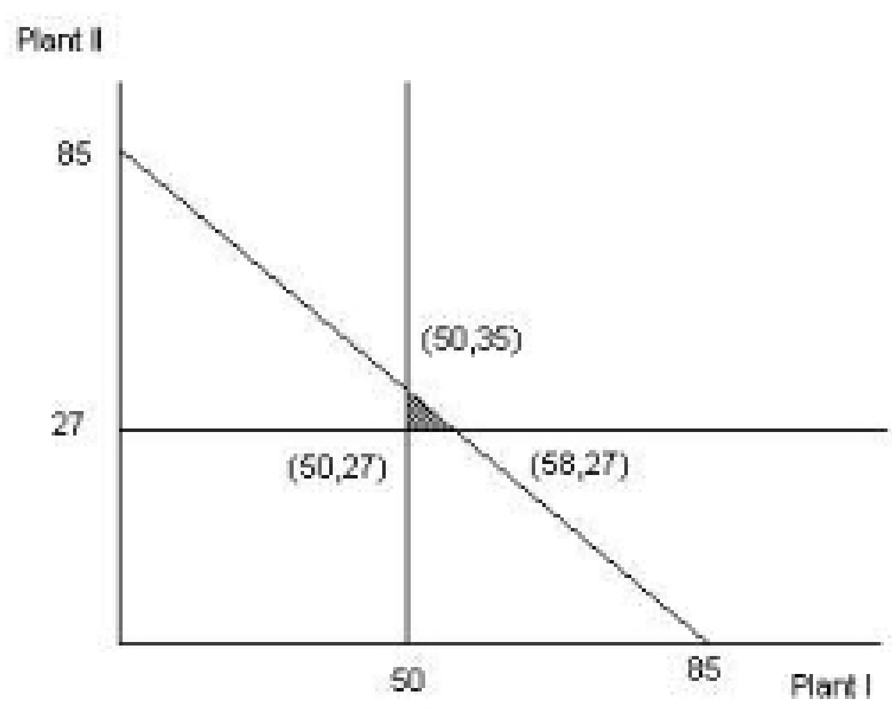
Demo 13-1-1 ANSWER

In this problem, let I represent the number of engines shipped to plant I and II represent the number of engines shipped to plant II.

The Objective Function here is to Minimize shipping costs:	Min 20(I) + 35(II)
The constraints here are:	
You can't ship more than 85 engines:	I + II ≤ 85
You have to ship at least 50 engines to plant I	I ≥ 50
You have to ship at least 27 engines to plant II	II ≥ 27
You can't ship a negative number of engines	I , II ≥ 0

Next, you graph the each of these constraints:



Now, you test each corner solution:

Points	Objective Function: (20 I + 35 II)				
(50,27)	20 (50) + 35 (27)	=	1000 + 945	=	1945
(50,35)	20 (50) + 35 (35)	=	1000 +1225	=	2225
(58,27)	20 (58) + 35 (27)	=	1160 + 945	=	2105

The minimum cost is $1945.

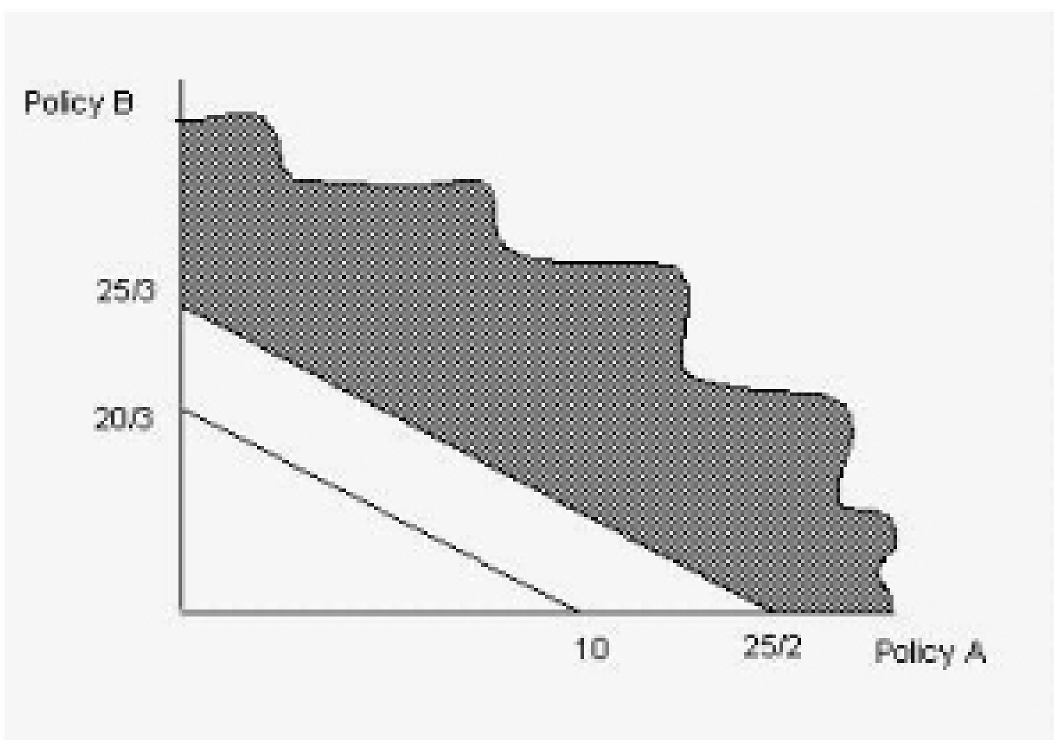
Please send comments and corrections to me at mconstas@csulb.edu

Demo 13-1-2 ANSWER

In this problem, let A represent the number of units of Policy A purchased and B represent the number of units of Policy B purchased.

The Objective Function here is to Minimize insurance costs:	Min 50(A) + 40(B)
The constraints here are:	
You want at least \$100 coverage for fire/theft	$10A + 15B \geq 100$
You want at least \$1000 coverage for liability	$80A + 120B \geq 1000$
You can't purchase a negative number of units of insurance	$A, B \geq 0$

Next, you graph the each of these constraints:



Now, you test each corner solution:

Points	Objective Function: (50 A + 40 B)				
(25/2,0)	50 (25/2) + 40 (0)	=	625 + 0	=	625
(0,25/3)	50 (0) + 40 (25/3)	=	0 + 333	=	333

The minimum cost is \$333.

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Demo 13-1-3 ANSWER

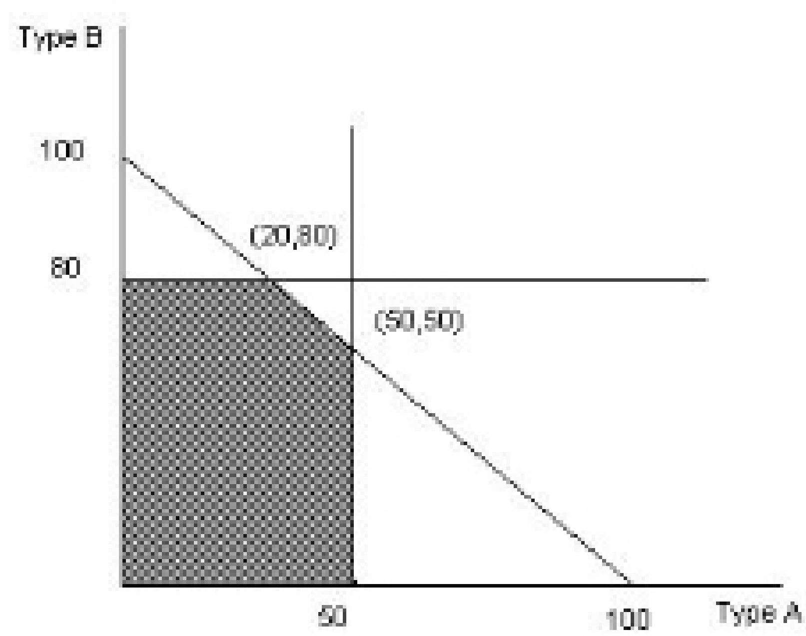
In this problem, let A represent the number of gallons of milk purchased from Dairy A and B represent the number of gallons of milk purchased from Dairy B.

The Objective Function here is to Maximize butterfat: Max .037(A) + .032(B)

The constraints here are:

a	You can only get 50 gallons from Dairy A	$A \le 50$
b	You can only get 80 gallons from Dairy B	$B \le 80$
c	You can't buy more than 100 gallons of milk	$A + B \le 100$
d	You can't buy a negative number of gallons	$A, B \ge 0$

Next, you graph the each of these constraints:



Now, you test each corner solution:

Points	Objective Function: (.037A + .032B)		
(0,80)	.037 (0) + .032 (80)	= 0 + 2.56	= 2.56
(20,80)	.037(20) + .032 (80)	= .74 + 2.56	= 3.3
(50,50)	.037(50) + .032 (50)	= 1.85 + 1.6	= 3.45
(50,0)	.037(50) + .032 (0)	= 1.85 + 0	= 1.85

The maximum butterfat is 3.45 gallons.

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