

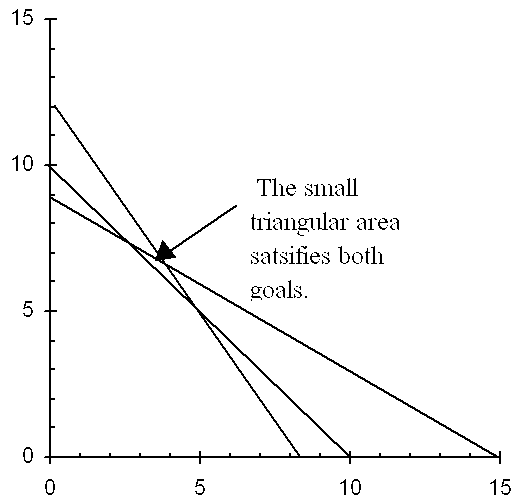
Goal Programming PROBLEM (Ch. 14)

1. Solve the following problem graphically and with Solver:

$$\text{Min } P_1(d_1^+) + P_2(d_2^-)$$

$$\begin{aligned} \text{s.t. } & 3x_1 + 5x_2 \leq 45 \\ & 3x_1 + 2x_2 - d_1^+ + d_1^- = 24 \\ & x_1 + x_2 - d_2^+ + d_2^- = 10 \\ & x_1, x_2, d_1^-, d_1^+, d_2^-, d_2^+ \geq 0 \end{aligned}$$

ANS:



We now will solve the problem using Solver and the Goal Programming Methodology:

Goal Programming

Ch. 14, Ex. No. 1

First Goal Optimization:

Vars	Decision		Slacks/Surplus					
	X1	X2	Vars.					
Vals	8	0	D1M	D1P	D2M	D2P		
			0	0	0	2	0	

O.F:

Minimize 0

Constraints:	Eq.	Rel.	RHS
Probl.	24	<=	45
G-1	24	=	24
G-2	10	=	10

Non-Neg.

X1	>= 0
X2	>= 0
D1M	>= 0
D1P	>= 0
D2M	>= 0
D2P	>= 0

Objective Cell (Min)

Cell	Name	Original Value	Final Value
\$B\$8	O.F: Minimize X1	0	0

Variable Cells

Cell	Name	Original Value	Final Value	Integer
\$B\$6	Vals X1	0	8	Contin
\$C\$6	Vals X2	0	0	Contin
\$D\$6	Vals D1M	0	0	Contin
\$E\$6	Vals D1P	0	0	Contin
\$F\$6	Vals D2M	0	2	Contin
\$G\$6	Vals D2P	0	0	Contin

Second Goal Optimization:

Vars	Decision		Slacks/Surplus Vars.			
	X1	X2	D1M	D1P	D2M	D2P
Vals	4	6	0	0	0	0

O.F: Minimize 0

Constraints:	Eq.	Rel.	RHS
Probl.	42	<=	45
G-1	24	=	24
G-2	10	=	10
First Pre-Emp	0	=	0
Non-Neg.			

	>=	
X1	0	
	>=	
X2	0	
	>=	
D1M	0	
	>=	
D1P	0	
	>=	
D2M	0	
	>=	
D2P	0	

Objective Cell (Min)

Cell	Name	Original Value	Final Value
\$B\$8	O.F: Minimize X1	0	0

Variable Cells

Cell	Name	Original Value	Final Value	Integer
\$B\$6	Vals X1	0	4	Contin
\$C\$6	Vals X2	0	6	Contin
\$D\$6	Vals D1M	0	0	Contin
\$E\$6	Vals D1P	0	0	Contin
\$F\$6	Vals D2M	0	0	Contin
\$G\$6	Vals D2P	0	0	Contin

