



1 Linear Programming using Excel

Input Linear Program into Excel

Decision Variables					<u>Constraints</u>					
	X_1, X_2, X_3	, X ₄				4	$x_1 + x_2 + 2x_3$	$+ x_4 = 5$	5000	
						х	1 ≤ 2000			
	Ohiectiv	e Functio	n			x	2 < 860			
	Maximiz	o Drofit:	<u>, , , , , , , , , , , , , , , , , , , </u>			x	2 = 980			
					-	×	3 <u>−</u> 2000			
	$P = 5.5 \times$	(₁ + 6.25)	x ₂ + 4.6/	$X_3 + 5.2$	3X ₄	X	4 ≤ 3000			
	A	В	С	D	E		F	G	H	1
						Lab	els for decision variable	s		
1		X1	X2	X3	X4					
2		Item 1	Item 2	Item 3	Item 4	Valu	ues of decision variable	s are to be left	blank.	
3	Weight in Kilos	0	860	570	3000	Exc	ei will compute optimal	values.		
4	Load Value	5.5	6.25	4.67	5.23	=SUMPRODUCT(B4:E4,B3:E3)	< Objectiv	e Function	
5	Constraints:									
6	Capacity	4	1	2	1	=SUMPRODUCT(B6:E6,\$B\$3:\$E\$3)	=	5000	
7	Item 1 Limit (Kilos)	1	0	0	0	=SUMPRODUCT(B7:E7,\$B\$3:\$E\$3)	<=	2000	
8	Item 2 Limit (Kilos)	0	1	0	0	=SUMPRODUCT(B8:E8,\$B\$3:\$E\$3)	<=	860	
9	Item 3 Limit (Kilos)	0	0	1	0	=SUMPRODUCT(B9:E9,\$B\$3:\$E\$3)	<=	980	
10	Item 4 Limit (Kilos)	0	0	0	1	=SUMPRODUCT(B10:E10,\$B\$3:\$E\$3)	<=	3000	
11			1	\		LHS	^		RHS	
12										
13			Constraint c	oefficients		Constraints and C	bjective Function are c	omputed using	g the SUMPRODU	JCT function.
14						Example: 4x1 + x2	2 + 2x3 + x4 -> =501VIPR	UDUCI(B0:E0,	\$D\$3:\$E\$3)	
				~						
				=S	UMPRO	DUCT(B6:	E6,\$B\$5:\$E\$	5)		
				Note:	Dollar s	sign forces a	bsolute refere	ence.		
				Note:	Dollar s	sign forces a	bsolute refere	ence.		

Drag the fill handle 13 to copy down to other cells.

To use solver, flip to the back ——> Ok let's do this



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Solver

File \rightarrow Options \rightarrow Add-ins Pane \rightarrow Go \rightarrow select Solver Add-ins \rightarrow OK

To add Solver to Excel, go on Data menu and select Solver.

By Changing Variab	le Cells: Maximize or Minimi	ze the Objective Fund
Subject to the Cons	Select Decision Variab	les (Yellow cells)
\$F\$10 <= \$H\$10 \$F\$6 = \$H\$6 \$F\$7 <= \$H\$7 \$F\$8 <= \$H\$8 \$F\$9 <= \$H\$9	Add each constraint separate	Add Change ely * Delete
n-Negativity Constraint		Reset All Load/Save
Make Unconstration	nined Variables Non-Negative	Use Simplex LP Options
Solving Method Select the GRG Nonli nonlinear. Select the and select the Evolution remote	near engine for Solver Problems LP Simplex engine for linear Solv ionary engine for Solver problem	that are smooth ver Problems, s that are non-

*Note: When using solver, always select your SUMPRODUCT function, not the coefficients.



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