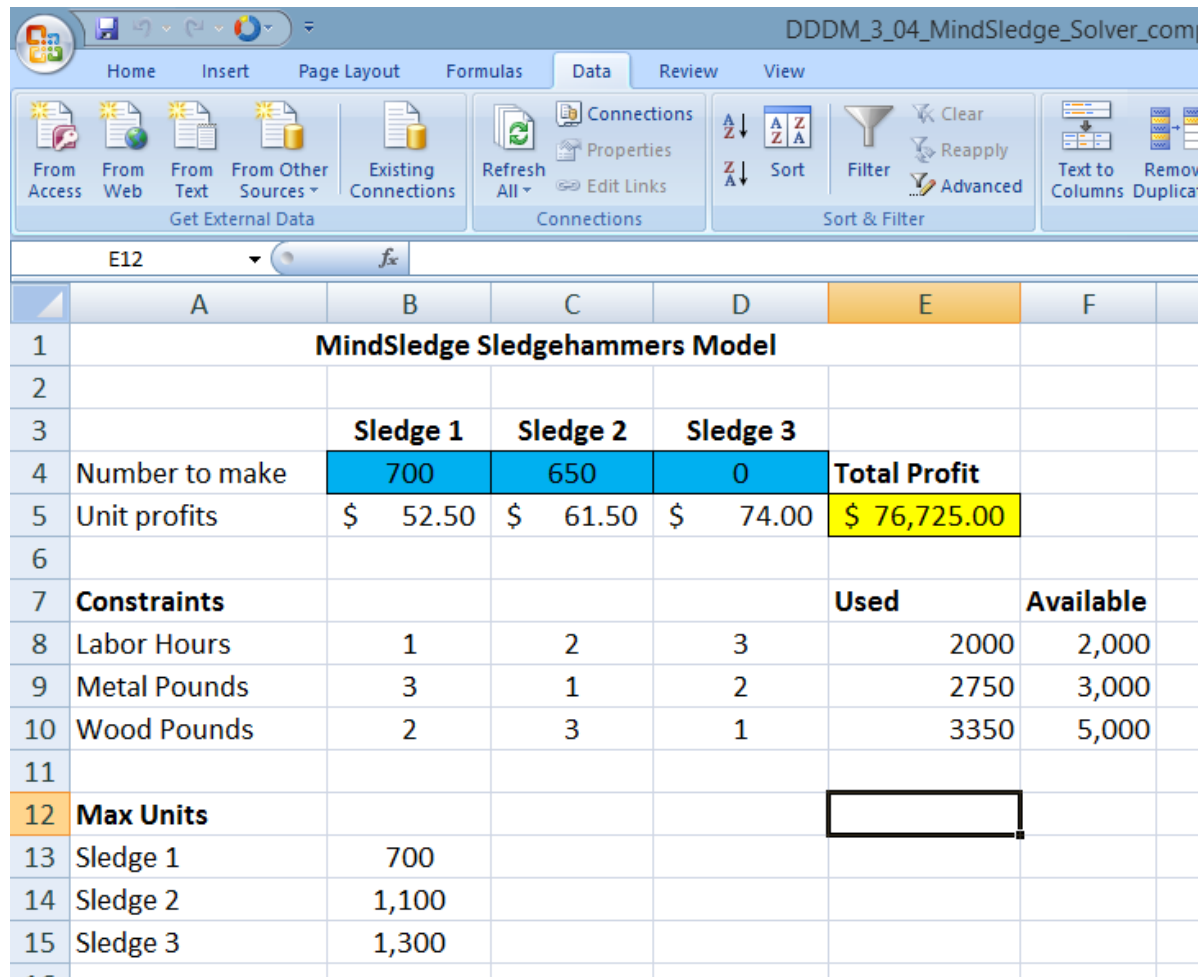


Excel: Solver



DDDM_3_04_MindSledge_Solver_com

	A	B	C	D	E	F
1	MindSledge Sledgehammers Model					
2						
3		Sledge 1	Sledge 2	Sledge 3		
4	Number to make	700	650	0	Total Profit	
5	Unit profits	\$ 52.50	\$ 61.50	\$ 74.00	\$ 76,725.00	
6						
7	Constraints				Used	Available
8	Labor Hours	1	2	3	2000	2,000
9	Metal Pounds	3	1	2	2750	3,000
10	Wood Pounds	2	3	1	3350	5,000
11						
12	Max Units					
13	Sledge 1	700				
14	Sledge 2	1,100				
15	Sledge 3	1,300				

Solver is a very useful spreadsheet tool when performing linear programming and modeling. The spreadsheet provided for Excel in this assignment has the Solver programming completed for you. The problem being asked in this spreadsheet is: "How many sledge hammers must the company produce to maximize its total profit, keeping in mind that the company has certain constraints?" In this case, the company can only produce 700 of sledge type 1, 1100 of sledge type 2, and 1300 of sledge type 3. Also, the company has a limited amount of labor, metal, and wood products available. All of these constraints must be taken into account when solving the problem for the maximum total profit. The first step is to open the spreadsheet.

DDDM_3_04_MindSledge_Solver.com						
<div> <div> From Access From Web From Text From Other Sources Existing Connections Refresh All Connections Properties Edit Links Sort Filter Clear Reapply Advanced Text to Columns Remove Duplicates </div> <div> Home Insert Page Layout Formulas Data Review View </div> </div>						
E12						
	A	B	C	D	E	F
1	MindSledge Sledgehammers Model					
2						
3		Sledge 1	Sledge 2	Sledge 3		
4	Number to make	700	650	0	Total Profit	
5	Unit profits	\$ 52.50	\$ 61.50	\$ 74.00	\$ 76,725.00	
6						
7	Constraints				Used	Available
8	Labor Hours	1	2	3	2000	2,000
9	Metal Pounds	3	1	2	2750	3,000
10	Wood Pounds	2	3	1	3350	5,000
11						
12	Max Units					
13	Sledge 1	700				
14	Sledge 2	1,100				
15	Sledge 3	1,300				

In this spreadsheet there are a number of things to notice. In this company's situation, the optimal production level is to make 700 Type 1 sledgehammers and 650 Type 2 sledgehammers. This would produce a profit of \$76,725. The limiting variables in this analysis were the production limit of Type 1 sledgehammers and the limit of labor hours.

D13						
	A	B	C	D	E	F
1	MindSledge Sledgehammers Model					
2						
3		Sledge 1	Sledge 2	Sledge 3		
4	Number to make	700	650	0	Total Profit	
5	Unit profits	\$ 52.50	\$ 61.50	\$ 74.00	\$ 76,725.00	
6						
7	Constraints				Used	Available
8	Labor Hours	1	2	3	2000	2,000
9	Metal Pounds	3	1	2	2750	3,000
10	Wood Pounds	2	3	1	3350	5,000
11						
12	Max Units					
13	Sledge 1	1,200				
14	Sledge 2	1,100				
15	Sledge 3	1,300				

To see the effect of changing one of these variables, let's change the production limit of Type 1 sledgehammers to 1200.

DDDM_3_04_MindSledge_Solver_complete (6) - Microsoft Ex...

Home Insert Page Layout Formulas **Data** Review View

Get External Data Refresh All Properties Edit Links Connections Sort & Filter Filter Clear Reapply Advanced Text to Columns Remove Duplicates Data Tools Data Analysis Solver Outline Analysis

B13 900

MindSledge Sledgehammers Model

Sledge 1 Sledge 2 Sledge 3

Number to make 700 650 0 Total Profit

Solver
What-if analysis tool that finds the optimal value of a target cell by changing values in cells used to calculate the target cell.
SOLVER
Press F1 for more help.

To use Solver, let's go to the "Data" tab and select "Solver". The following table will appear:

Solver Parameters

Set Target Cell:

Equal To: ☒ Max ☐ Min ☐ Value of:

By Changing Cells:

Subject to the Constraints:

\$B\$4 <= \$B\$13
\$C\$4 <= \$B\$14
\$D\$4 <= \$B\$15
\$D\$4 >= 0
\$E\$10 <= \$F\$10
\$E\$8 <= \$F\$8
\$E\$9 <= \$F\$9

The table should be programmed exactly like the table above. If it is blank, then fill in the table exactly like the table above and then click “Solve” for the solver to run.

Solver Results

Solver found a solution. All constraints and optimality conditions are satisfied.

☒ Keep Solver Solution ☐ Restore Original Values

Reports:

This window should appear. Selecting “Keep Solver Solution” will fill in the original table to produce the following table:

DDDM_3_04_MindSledge_Solver_co						
Home Insert Page Layout Formulas Data Review View						
From Access From Web From Text From Other Sources Existing Connections Refresh All Connections Sort Filter Clear Reapply Advanced Text to Columns Remove Duplicates						
F2 fx						
	A	B	C	D	E	F
1	MindSledge Sledgehammers Model					
2						
3		Sledge 1	Sledge 2	Sledge 3		
4	Number to make	800	600	0	Total Profit	
5	Unit profits	\$ 52.50	\$ 61.50	\$ 74.00	\$ 78,900.00	
6						
7	Constraints				Used	Available
8	Labor Hours	1	2	3	2000	2,000
9	Metal Pounds	3	1	2	3000	3,000
10	Wood Pounds	2	3	1	3400	5,000
11						
12	Max Units					
13	Sledge 1	1,200				
14	Sledge 2	1,100				
15	Sledge 3	1,300				

The result is an increase in profit of \$2,175 to \$78,900. The new results show that the optimal profit production level for this situation is to produce 800 Type 1 sledgehammers and 600 Type 2 sledgehammers. The new limiting variables in this outcome are the limits of labor hours and pounds of metal.