

Today's LPP is a resource allocation problem:

Cost	Output X	Output Y	Output Z	Output W	Available
Resource 1	4 min	3 min	4 min	4 min	Exactly 60 hours
Resource 2	24 min	22 min	28 min	0 min	Exactly 416 hours
Resource 3	12 min	9 min	15 min	6 min	Exactly 204 hours
Profit	\$1	\$1	\$1	\$1	

How many X, Y, Z, and W should one make to maximize the profit while using all the resources?

(a) Write this as a system of equations, including the profit.

(b) Write this as a matrix. Use the columns in this order: X, Y, Z, P, W.

(c) Use your calculator to find its RREF.

(d) Now use four row ops to make the W column have the $\textcircled{1}$ in the first row.

(e) Write this as equations, solving for each $\textcircled{1}$ variable.

(f) What value of the free variable seems like a good idea?

(g) What is the profit?

Today's second LPP is a resource allocation problem:

Cost	Output X	Output Y	Output Z	Output W	Available
Resource 1	4 min	3 min	4 min	4 min	Exactly 60 hours
Resource 2	24 min	22 min	28 min	0 min	At most 416 hours
Resource 3	12 min	9 min	15 min	6 min	Exactly 204 hours
Profit	\$1	\$1	\$1	\$1	

or

Cost	Output X	Output Y	Output Z	Output W	Output U	Available
Resource 1	4 min	3 min	4 min	4 min	0 min	Exactly 60 hours
Resource 2	24 min	22 min	28 min	0 min	1 min	Exactly 416 hours
Resource 3	12 min	9 min	15 min	6 min	0 min	Exactly 204 hours
Profit	\$1	\$1	\$1	\$1	\$0	

How many X, Y, Z, and W should one make, and how many minutes of resource 2 should you waste to maximize the profit while using

(a) Write this as a system of equations, including the profit.

(b) Write this as a matrix. Use the columns in this order: X, Y, Z, P, W, U

(c) Use your calculator to find its RREF.

(d) Now use four row ops to make the W column have the ①

(e) Write this as equations, solving for each ① variable.

(f) What values of the two free variables seem like a good idea?

(g) What is the profit?