8. Apply one full step of the simplex algorithm. Circle your pivot, write out your row operations, and write down the next tableau. Explain why that next tableau is or is not final. (This is the table for #4 resulting from the three decisions: (1) Leafy is good, but limited by the demand for Leafy, (2) Soupy is good, but limited by the remaining supply of vegetable stock, (3) hungry Leafy customers are actually ok, as this decreases hungry Soupy customers)

	Meaty	Leafy	Soupy	Chicken	Beef	Veg.	Hungry M	Hungry L	Hungry S	Profit	RHS	
C	1	0	0	1	0	0	0	0	-3	0	700 / 1	700
B	6	0	0	0	1	0	0	0	-2	0	5000 / 6	833.3
P	0	0	1	0	0	0	0	0	1	0	900 / 0	—
HM	1	0	0	0	0	0	1	0	0	0	1200 / 1	1200
L	1/8	1	0	0	0	1/8	0	0	-1/4	0	1607/4 / (1/8)	3214
HL	-1/8	0	0	0	0	-1/8	0	1	1/4	0	793/4 / (-1/8)	—
Profit	-415/4	0	0	0	0	65/4	0	0	235/2	1	374455/2	

(a) Pivot column is any with negative in Profit row, so meaty

(b) Pivot row is smallest non-negative ratio, 700/1 is smallest, so R_1 is the pivot row

(c) use pivot row R_1 to fix the other rows

$R_2 - 6R_1$, R_3 is good, $R_4 - R_1$, $R_5 - \frac{1}{8}R_1$, $R_6 + \frac{1}{8}R_1$

$R_7 + \frac{415}{4}R_1$

	M	L	S	C	B	V	HM	HL	HS	P	RHS
M	1	0	0	1	0	0	0	0	-3	0	700
leftover B	0	0	0	-6	1	0	0	0	16	0	800
S	0	0	1	0	0	0	0	0	1	0	900
HM	0	0	0	-1	0	0	1	0	3	0	500
L	0	1	0	-1/8	0	1/8	0	0	1/8	0	1257/4
HL	0	0	0	1/8	0	-1/8	0	1	-1/8	0	1143/4
P	0	0	0	415/4	0	65/4	0	0	$\frac{-775}{4}$	1	259852.5

M = 700
L = 314.25
S = 900
P = $2598.525
but letting some soupy customers go hungry is more profitable

Is this a final tableau? Why or why not?

No. Negative in the HS column, P row means setting HS = 0 is not optimal, need another step.