

3. Zach's goal is to get the most bird-songs out of his limited resources. He has four limited resources: 396 sunflower seeds, 482 millet grains, 246 kernels of corn, and 593 crumbs of bread. He has designed two products for the birds: the Cheep dinner and the Squawky dinner. He predicts 2 lovely bird-songs for every Cheep dinner, and 3 loud bird-songs for every Squawky dinner. The resource usage and song production of each his products is listed in the following table:

	Seeds	Grains	Kernels	Crumbs	Songs
each Cheep dinner	4	6	2	8	2
each Squawky dinner	8	4	6	1	3
Available	396	482	246	593	

Zach's friend suggests that Zach feed the birds 51 Cheep dinners and 24 Squawky dinners. Describe the effects of such a business decision by filling in the form:

Number of Cheep dinners:	51
Number of Squawky dinners:	24
Number of songs:	<u>174</u>
Leftover seeds:	<u>0</u>
Leftover grains:	<u>80</u>
Leftover kernels:	<u>0</u>
Leftover crumbs:	<u>161</u>

$$2(51) + 3(24) = 102 + 72$$

$$396 - 4(51) - 8(24) = 396 - 204 - 192$$

$$482 - 6(51) - 4(24) = 482 - 306 - 96$$

$$246 - 2(51) - 6(24) = 246 - 102 - 144$$

$$593 - 8(51) - 1(24) = 593 - 408 - 24$$

Give your own recommendation in the next form to increase the number of songs using only his limited resources #6 and #7 may be useful.

Number of Cheep dinners:	<u>71</u>	} #6
Number of Squawky dinners:	<u>14</u>	
Number of songs:	<u>184</u>	
Leftover seeds:	<u>0</u>	} #7 or just arithmetic
Leftover grains:	<u>0</u>	
Leftover kernels:	<u>20</u>	
Leftover crumbs:	<u>11</u>	

Short on seeds and kernels.
Squawky is very expensive there (2x on seeds, 3x on kernels), but not that profitable (only 1.5x)
We need to decrease Squawky enough to increase Cheep!
Trial and error is a little slow so check #6 and use MA162