



The University of Georgia

Mathematics Education Program

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Candy Problem

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Goal: To calculate cost of a number of candies

Candy Problem

Daniel bought one pound of jellybeans and two pounds of chocolates for \$2.00. A week later, he bought four pounds of caramels and one pound of jellybeans, paying \$3.00. The next week, he bought three pounds of licorice, one pound of jellybeans and one pound of caramels for \$1.50. How much would he have to pay on his next trip to the candy store, if he bought one pound of each of the four candies?

Solution

Denote by

J - pounds of Jelly Beans, C - pounds of Chocolates, K - pounds of Caramels, L - pounds of Licorice, Y cost for one pound of candy of each type.

Setting up the system of linear equations yield:

$$J + 2C = 2$$

$$J + 4K = 3$$

$$J + K + 3L = 1.5$$

$$J + C + K + L = Y$$

Using a spreadsheet to input the

Jelly Add this Bean	Chocolates	Caramel	Licorice	Cost
1	2	0	0	2
1	0	4	0	3
1	0	1	3	1.5
1	1	1	1	Y

Now focusing on the first 3 equations, multiply each so that the last column has equal numbers. So multiply the first by 3, the second by 2 and the third by 4 to give the following result:

Jelly Bean	Chocolate	Caramel	Licorice	Cost
3	6	0	0	6
2	0	8	0	6
4	0	4	12	6

Next add all three rows to give one that looks as follows:

Jelly Bean	Chocolate	Caramel	Licorice	Cost
9	6	12	12	18

Then divide through by a common factor, which is 3 in this case,

Jelly Bean	Chocolate	Caramel	Licorice	Cost
3	2	4	4	6

Next add this result to the first equation to give:

Jelly Bean	Chocolate	Caramel	Licorice	Cost
4	4	4	4	8

Now simplify this by dividing through by 4.

Jelly Bean	Chocolate	Caramel	Licorice	Cost
1	1	1	1	2

1

1

1

1

2

Now comparing this to the fourth equation in the original setup, $Y = 2$, shows that one pound of each item taken together will be \$2.00.
