Money Bags

14/3/13

Question

Ram divides 15 pennies among four small bags.

He labelled each bag with the number of pennies inside the bag.

He could then pay any sum of money from 1p -15p without opening any bag.

How many pennies did Ram put in each bag?

The Strategy I Used

- One strategy I used was.'Building Up'. This is a strategy where you start from the very first thing (In this case, a number) and build up from there. For example, to get 1 I would have to have 1 and to get 2 I would have to have 2. Building up is a strategy used at a young age and not commonly used once you get to year 3 but in this case, it was only to 15 so it just took a minute.

Second Strategy I Used

- I also used 'Eliminate all Possibilities'. For instance to get 15 you could use 1,3,5,6 but you couldn't get 13. It definitely came in handy and was what I started using first. Eliminating all possibilities is quite a hard strategy and you need to be able to have a very good estimate or else you would be stuck on the problem for ever.

My Solution

- The first thing I did was use 'Eliminate all Possibilities'. It came in handy but wasn't very effective. What I did next was was use 'Building Up'. I just went up 1 by 1. So to buy something that is one penny I would have to have 1 penny and so on continuing that same pattern. It is very easy. When I kept continuing on like that I found out the answer in n time.

- In the end I ended up with the following answer: 1,2,4,8.

What I Found Out

* I found out that just with the four numbers 1,2,4 and 8 you can add up any number from 1-15 , which is quite fascinating. I also found out that you just have to keep doubling the numbers to keep going. 16, 32, 64, 128. Already, I can find the largest amount of pennies you can spend with 1, 2, 4, 8, 16, 32, 64 and 128 and I could keep going on. I will tell you the reason why. When you look at my chart you will see that the maximum amount of pennies for 1 is 1. For 1 and 2 it's 3. For 1, 2, and 4 it's 7. To get from 1-3 you add 2 and to get from 3-7 you add 4. Below the picture is an chart of the largest sum of pennies you can spend starting from 1, all the way to the largest sum of pennies you can spend with the following numbers: 1,2,4,8,16,32,64 and 128.

Chart

Coins	Maxium Amount
1	1
2	3
4	7
8	15
16	31
32	63
64	127
128	255

Reflection

- It was a fun puzzle but I didn't get to savour it because I figured the answer out in a minute. All in all it was entertaining while it lasted and would have been more fun if it lasted a little longer.


THANK
YOU