



AUSTRALIAN MATHS TRUST

Maths Challenge Middle Primary: Years 3–4 Practice Problem

MP2: Money Matters

Solutions

a Emma can make 35 cents in five ways:

20 c	10 c	5 c
1	1	1
1	0	3
0	3	1
0	2	3
0	1	5

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b To minimise the number of coins, Emma must select as many \$2 coins as possible, then as many \$1 coins as possible, and so on, giving 11 coins: five \$2, two \$1, one 50 c, two 20 c, one 5 c.

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c There are three possible collections of 12 coins.

\$2	\$1	50 c	20 c	10 c	5 c
5	2	1	1	2	1
5	1	3	2	0	1
4	4	1	2	0	1

Any one of the collections is acceptable.

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d Emma starts with 30 coins totalling \$19.25. If she makes \$12.95, then there would be \$6.30 left. So she would make \$12.95 with the largest number of coins if she made \$6.30 with the least number of coins. The least number of coins needed to make \$6.30 is five: three \$2, one 20 c, one 10 c. So the largest number of coins available to make \$12.95 is

$$30 - 5 = 25.$$

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Discussion

1. This problem is a modification of one proposed by Lorraine Motter-shead.
2. It involves careful listing of coin combinations.
3. Counting off the largest denomination coins first achieves the least number of coins to make a given amount. However, counting off the smallest denomination coins first does not necessarily result in the largest number of coins. For example, in Part d, this strategy would give less than 25 coins.