PUZZLING CARTOON
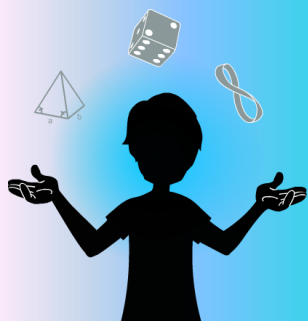
- 10 COINS -

The puzzle

Uncle Bob has 10 coins in his wallet: 5 of which are $1 coins and 5 of which are $2 coins. He shares his coins with Mathilde, Mathias and Matthew. They all receive the same sum. Mathias and Mathilda receive the same number of coins.

How many coins of each type has Matthew received?

The answer:

Mathilde and Mathias receive 2 $2 coins and 1 $1 coin. Matthew receives 3 $1 coins and 1 $2 coin.

The solution:

First of all, it is possible to know the total amount held in Uncle Bob's wallet:

<div align="center">

5 $1 coins (5 x $1) = $5.
5 $2 coins (5 x $2) = $10.
The amount is: $5 + $10 = $15.

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For each one to receive the same sum, the total amount must be divided in 3 equal amounts: $15 ÷ 3 = $5 per person.

With $1 coins and $2 coins, there are different ways to make a $5 amount. Here they are:
1st way: $1 + $1 + $1 + $1 + $1
2nd way: $1 + $1 + $1 + $2
3rd way: $2 + $2 + $1

If one of them uses the first way to obtain $5, he uses Uncle Bob's 5 $1 coins. So, the other two cannot have access to the dollar coins. By not having any $1 coin, they cannot make $5. Therefore, no one can use the first way.

Mathias and Mathilde must receive the same number of coins. If both use the 2nd way to make $5, they would use 6 $1 coins. However, Uncle Bob has only 5. Therefore, they must use the 3rd way.

There is then only one way to distribute the 10 coins in order for each one to receive the same sum:
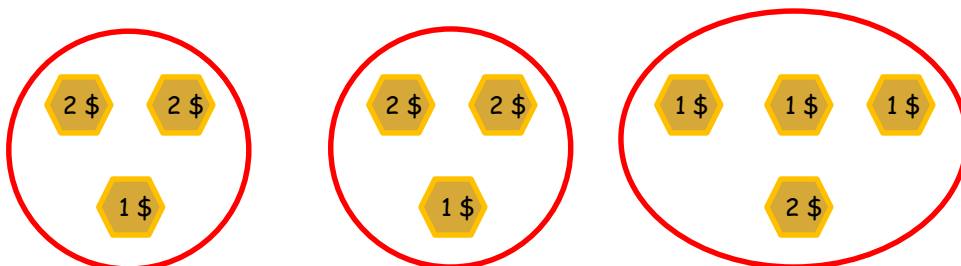
Since Mathilde and Mathias receive the same number of coins, they each have 2 $2 coins and 1 $1 coin. We then know Matthew has 3 $1 coins and 1 $2 coin.