The Problem:

A census taker approaches a house and asks the woman who answers the door; "How many children do you have, and what are their ages?"

Woman: "I have three children, the product of their ages is 36 and the sum of their ages is equal to the address of the house next door."

The census taker walks next door, comes back and says, "I need more information."

The woman replies, "Sorry, I have to go, my oldest child is sleeping upstairs."

Census taker: "Thank you, I now have everything I need."

What are the ages of each of the three children?

The Solution:

The reason the census taker could not figure out the children's ages is because, even with knowing the number on the house next door, there were still two possibilities.

The only way that the product could be 36 and still leave two possibilities is if the sum equals 13. These possibilities being **9, 2 and 2** or **6, 6 and 1**.

When the home owner stated that her "Oldest" child is sleeping she was giving the census taker the fact that there is a single "eldest" child. The children's ages are therefore 9, 2 and 2.

Notes:

Another way to factor 36 is 12, 3 and 1. The sum is 16. If the number next door had been 16, the census taker would not have needed to come back for more information.

Another factoring is 6, 3 and 2. The sum is 11. Once again, the census taker would not have needed to come back if that had been the number next door.

And nor will 4, 3 and 3 work because its sum of 10 is also unique.

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