



The University of Georgia

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Mathematics Education Program

J. Wilson, EMAT 6600

## The Census Taker Problem

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Goal: To calculate ages of children in a recent census

### The Census Taker Problem

During the recent census, a man told the census-taker that he had three children. When asked their ages, he replied, “The product of their ages is 72. The sum of their ages is the same as my house number.”

The census-taker ran to the door and looked at the house number. “I still can’t tell,” she complained.

The man replied, “Oh, that’s right. I forgot to tell you that the oldest one likes chocolate pudding.”

The census-taker promptly wrote down the ages of the three children.

How old are they?

**Solution**

In a spreadsheet generate all the sets of three numbers that product is 72 as follows:

a	b	c	Sum =
1	1	72	74
1	2	36	39
1	3	24	28
1	4	18	23
1	6	12	19
1	8	9	18
2	2	18	22
2	3	12	17
2	4	9	15
2	6	6	14
3	3	8	14
3	4	6	13

In the above, a, b, and c, are the possible ages of the children.

The census taker might want to rule out the first three possibilities because the ages, 72, 36, and 24 are really not children for the purpose of census taking.

The fact that the census taker could not tell the answer by looking at the house number and then at the sums tell us that the answer must be sum which was not unique, that is a sum that was shared. In this case the shared sum is 14. The possibilities in this case are ages 2, 6, 6 or 3, 3, 8.

Further the census taker is told that the oldest likes chocolate pudding. The chocolate pudding has nothing to do with the answer. However the fact that there is an oldest makes the 3, 3, 8 answer the more plausible answer.

Critics may argue that the 2, 6, 6 answer is still plausible because one of the twin is born before the other even by a few minutes, so given that there is an older of the twin, then there is an oldest child in the 2, 6, 6 group.

However, logic and the search for the better of the two choices should still lead us to choose the 3, 3, 8 group over the 2, 6, 6 group.

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