

MGSA - Problem of the Fortnite # 4

tl;dr: *A mathematician is trying to guess the ages of the local bartender's three children. The bartender gives 3 clues. Each clue is most enlightening when in context of the previous clue and all clues are necessary. The mathematician uses logic to deduce the bartender is the parent of a 2 year old ice cream lover and two 6 year old (twins?).*

Clue #1: "The product of their ages is 72."

Simple enough.. the set of possible ages consists of the following combinations:

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| (i) (1,1,72) | (vii) (2,3,12) |
| (ii) (1,2,36) | (viii) (2,4,9) |
| (iii) (1,3,24) | (ix) (2,6,6) |
| (iv) (1,4,18) | (x) (3,3,8) |
| (v) (1,6,12) | (xi) (3,4,6) |
| (vi) (2,2,18) | |

Clue #2: "look at the building number posted over the door to the bar, you'll see the sum of their ages" - bartender ... "That is still not enough information." - maths mcgee

The sum of their ages is *not unique* with respect to the set of possible ages (see Clue #1). Let's consider the sum of each possible age combination!

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| (i) $\sum (1,1,72) = 74$ | (vii) $\sum (2,3,12) = 17$ |
| (ii) $\sum (1,2,36) = 39$ | (viii) $\sum (2,4,9) = 15$ |
| (iii) $\sum (1,3,24) = 28$ | (ix) $\sum (2,6,6) = 14$ |
| (iv) $\sum (1,4,18) = 23$ | (x) $\sum (3,3,8) = 14$ |
| (v) $\sum (1,6,12) = 19$ | (xi) $\sum (3,4,6) = 13$ |
| (vi) $\sum (2,2,18) = 22$ | |

Ah, so only combinations (ix) and (x) (whose sum are both 14) are feasible.

Clue #3: "My youngest just loves strawberry ice cream."

The little one prefers strawberry ice cream. Me too. Wait, what does that have to do this? *There is only one youngest child.*

Ruling out combination (x), the ages of the children are: 2, 6, 6