Guess the Ages

PROBLEM: At a party the guest asks his host the ages of his three daughters. The host replies that the product of their ages is 72 and the sum of their ages is the same as the house number. The guest checks the house number and returns to the host. "You have not given me enough information." The host replies, "The oldest daughter likes strawberry pudding." With that the guest announces the ages of the daughters. What are the ages and how did the guest figure them out?

SOLUTION:

Numbers	Sum
1x1x72	74
1x2x36	39
1x3x24	28
1x4x18	23
1x6x12	19
1x8x9	18
2x2x18	22
3x2x12	17
4x2x9	15
8x3x3	14
6x4x3	13
6x6x2	14

ANSWER: 8,3,3

Since the guest knew the house number, he was able to eliminate all of the possibilities in which the sum wasn't equal to that number. However, even after seeing the house number, he said that he needed more information. So, it is obvious that there must be at least two possible solutions with the same sum. The only sum shared was 14, so the answer must either be 8x3x3 or 6x6x2. When the host said something about his oldest daughter, 6x6x2 is eliminated because that would mean there would be two oldest daughters.