

The Balance

A few years ago someone gave me a balance and four weights. The weights were marked in grams, x grams, y grams, z grams and w grams. After examining the weights, I discovered that using these three weights I could measure out any quantity from one to forty grams. What were x , y , z and w ? If I wanted to buy a fifth weight, what should the fifth weight be to maximize the number of different quantities I could weigh?