4 Blazers Score 50 Points Problem

Four Blazers (Aldridge, Batum, Crawford and Wallace) combined to score 50 points last night. If they each scored at least two, but none scored 25 or more, how many possible totals could they have?

For example:

Aldridge – 20
Batum – 10
Crawford – 10
Wallace – 10

is one possible way it could have happened.

solution using generating functions (from Jim Hatton)

Let the polynomial \((x^2 + x^3 + x^4 + \ldots + x^{24})\) represent one of the players possible points scored, with the \(x^n\) term representing that player scoring \(n\) points.

Note that if we expanded \((x^2 + x^3 + x^4 + \ldots + x^{24})^4\), the coefficient on the term with degree 50 would represent all the possible ways that you could choose terms from the four polynomials whose degree sums to 50. Using software to expand this polynomial, we get that the coefficient on the term with degree 50 is 8030.

So there are 8030 possible combinations