

$$\sum_{i=1}^3 \sum_{j=1}^4 a_{ij} = \sum_{j=1}^4 a_{1j} + \sum_{j=1}^4 a_{2j} + \sum_{j=1}^4 a_{3j}$$

The diagram illustrates the expansion of the double sum  $\sum_{i=1}^3 \sum_{j=1}^4 a_{ij}$  into three single sums, each enclosed in a colored box (red, green, and blue). These boxes are then expanded into their explicit terms, also enclosed in colored boxes, with arrows indicating the correspondence between the boxed sums and their expanded forms.

$$= a_{11} + a_{12} + a_{13} + a_{14} + a_{21} + a_{22} + a_{23} + a_{24} + a_{31} + a_{32} + a_{33} + a_{34}$$