

Olympiad Participants

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To minimize the number of non-participants, it is necessary to maximize the number of students who participated in at least one Olympiad. This is achieved if the sets of participants in the three Olympiads do not intersect, meaning each participant belongs to only one set. In this case, the total number of participants is $a + b + c$. However, if the sum exceeds n , it can be arranged so that all n students participate in at least one Olympiad. Therefore, the minimum number of non-participants is $\max(0, n - (a + b + c))$.

To maximize the number of non-participants, it is necessary to minimize the number of students participating in at least one Olympiad. This is possible if the sets of participants overlap as much as possible— for example, when the same students belong to all three sets. In this case, the number of participants is $\max(a, b, c)$. Thus, the maximum number of non-participants is $n - \max(a, b, c)$.