

Question 40

Counterexample: 15.

$9 + 9 + n = 18 + n > 15$, therefore we can only use one 9.

$9 + 4 + 4 = 17 > 15$, therefore we can use at most one 9 and one 4.

$9 + 4 + 1 = 14$ is the greatest sum we can create with at most one 9 and one 4.

Clearly, at least one more 1 is required to create 15. Therefore, it is impossible to write the number 15 as the sum of the squares of three integers.