

Q5 Ramanujan Number is the smallest number that can be expressed as the sum of two cubes in two different ways. WAP to print all such numbers up to a reasonable limit

```
#include <stdio.h>
int main() {
    int L, a, b, c, d;
    int n1, n2;

    printf("Enter the limit (max cube root); ");
    scanf("%d", &L);

    printf("Ramanujan Numbers up to limit %d: \n", L);
    for (a=1; a <= L; a++) {
        for (b=a; b <= L; b++) {
            n1 = a*a*a + b*b*b;
            for (c=a+1; c <= L; c++) {
                for (d=c; d <= L; d++) {
                    n2 = c*c*c + d*d*d;
                    if (n1 == n2) {
                        printf("%d = %d^3 + %d^3 = %d^3\n", n1, a, b, c, d);
                    }
                }
            }
        }
    }
}
```

Remarks: 3 return 0;

Teacher's Signature _____

C Online Compiler

main.cRunClear

```
1 #include <stdio.h>
2
3 int main() {
4     int L, a, b, c, d;
5     long long n1, n2;
6
7     printf("Enter the limit (max cube root): ");
8     scanf("%d", &L);
9
10    printf("Ramanujan numbers up to limit %d:\n", L);
11
12    // Outer loops for the first sum of cubes (a^3 + b^3)
13    for (a = 1; a < L; a++) {
14        for (b = a; b < L; b++) {
15            n1 = (long long)a * a * a + (long long)b * b * b;
16
17            // Inner loops for the second sum of cubes (c^3 + d^3)
18            // c starts from a + 1 to ensure a, b, c, d are
19            // distinct
20            for (c = a + 1; c < L; c++) {
21                for (d = c; d < L; d++) {
22                    n2 = (long long)c * c * c + (long long)d * d *
23                        d;
24
25                    if (n1 == n2) {
26                        printf("%lld = %d^3 + %d^3 = %d^3 + %d^3\n",
27                               n1, a, b, c, d);
28
29                }
30            }
31        }
32    }
33}
```

Output

```
Enter the limit (max cube root): 13
Ramanujan numbers up to limit 13:
1729 = 1^3 + 12^3 = 9^3 + 10^3

*** Code Execution Successful ***
```



The image shows a person's silhouette in the background, suggesting they are the one writing or reviewing the code. The person is wearing glasses and a dark shirt.