5964   LCM Extreme

Find the result of the following code:

```
unsigned long long allPairLcm(int n){
    unsigned long long res = 0;
    for( int i = 1; i\le n;i++)
        for(int j=i+1;j\le n;j++)
            res += lcm(i, j);// lcm means least common multiple
    return res;
}
```

A straight forward implementation of the code may time out.

Input

Input starts with an integer T (≤ 25000), denoting the number of test cases.

Each case starts with a line containing an integer n ($1 \le n \le 5*10^6$).

Output

For each case, print the case number and the value returned by the function 'allPairLcm(n)'. As the result can be large, we want the result *modulo* 2^{64}.

Sample Input

```
4
2
10
13
100000
```

Sample Output

```
Case 1: 2
Case 2: 1036
Case 3: 3111
Case 4: 9134672774499923824
```