Square-free integers

In number theory we call an integer square-free if it is not divisible by a perfect square, except 1. You have to count them!

Input

First line contains an integer T, the number of test cases ($T \leq 100$). The following T lines each contains one positive integer: n, where $n \leq 10^{14}$

Output

T lines, on each line output the number of (positive) square-free integers not larger than n.

Example

Input:
```
3
1
1000
100000000000000
```

Output:
```
1
608
60792710185947
```

Warning: A naive algorithm probably not works.