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Cut the Circle

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by pruthvishalcodi1

Problem

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Set by PruthvishE

```
Problem Setter's code:
 #include <iostream>
 #include <cstdio>
 using namespace std;
 const int MODULO = 1000000007;
 void add(int &a, int b) {
     a += b;
     if (a >= MODULO) {
         a -= MODULO;
 int gcd(int a, int b) { // naive version since b <= 4</pre>
     for (int i = b; i > 0; i --) {
         if (a % i == 0 && b % i == 0) {
             return i;
     return Oxabacaba;
 int calculateCombination(int n, int k) {
     if (k == 0) {
         return 1;
     } else if (k > n) {
         return 0;
     int d[5];
     for (int i = 1; i <= k; i ++) {
         d[i] = n - i + 1;
     for (int i = 2; i <= k; i ++) {
         int divider = i;
         for (int j = 1; j <= k; j ++) {
             int g = gcd(d[j], divider);
             d[j] /= g;
             divider /= g;
     int result = 1;
     for (int i = 1; i <= k; i ++) {
         result = 1LL * result * d[i] % MODULO;
     return result;
 int calculate(int n) {
     int sum = 0;
     for (int i = 0; i <= 4; i ++) {
         add(sum, calculateCombination(n - 1, i));
```

Statistics

Difficulty: Medium Complexity: Required Knowledge: geometry, combinatorics Publish Date: Jul 04 2019

```
return sum;
}

int main() {
    int T, N;
    scanf("%d", &T);
    for (int c = 0; c < T; c ++) {
        scanf("%d", &N);
        printf("Case %d: %d\n", c + 1, calculate(N));
    }

    return 0;
}</pre>
```

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