8201 BBP Formula

In 1995, Simon Plouffe discovered a special summation style for some constants. Two year later, together with the paper of Bailey and Borwien published, this summation style was named as the Bailey-Borwein-Plouffe formula.Meanwhile a sensational formula appeared. That is

$$\pi = \sum_{k=0}^{\infty} \frac{1}{16^k} \left(\frac{4}{8k+1} - \frac{2}{8k+4} - \frac{1}{8k+5} - \frac{1}{8k+6} \right)$$

For centuries it had been assumed that there was no way to compute the n-th digit of π without calculating allof the preceding $n - 1$ digits, but the discovery of this formula laid out the possibility. This problem asks you to calculate the hexadecimal digit n of π immediately after the hexadecimal point. For example, the hexadecimalformat of n is 3.243F6A8885A308D313198A2E... and the 1-st digit is 2, the 11-th one is A and the 15-th one is D.

Input

The first line of input contains an integer T $(1 \leq T \leq 32)$ which is the total number of test cases.

Each of the following lines contains an integer n $(1 \leq n \leq 100000)$.

Output

For each test case, output a single line beginning with the sign of the test case. Then output the integer n, and the answer which should be a character in {`0`, `1`, ... , `9`, `A`, `B`, `C`, `D`, `E`, `F`} as a hexadecimal number

Sample Input

```
5
1
11
111
1111
11111
```

Sample Output

```
Case #1: 1 2
Case #2: 11 A
Case #3: 111 D
Case #4: 1111 A
Case #5: 11111 E
```