



## AMERICAN COMPUTER SCIENCE LEAGUE

2019-2020

Contest #1

### Intermediate Division - Number Transformation

**PROBLEM:** Given a positive integer (call it  $N$ ) and a position in that integer (call it  $P$ ) transform  $N$ . To transform  $N$ , find the  $P^{\text{th}}$  digit of  $N$  from the right. Replace each of the digits to the left of the  $P^{\text{th}}$  digit by the sum of that digit and the  $P^{\text{th}}$  digit. If the sum is greater than 9, use just the units digits (see the second example below). Replace each of the digits to the right of the  $P^{\text{th}}$  digit by the absolute value of the difference between it and the  $P^{\text{th}}$  digit. Do not change the  $P^{\text{th}}$  digit.

**Example 1:**  $N=102439$ ,  $P=3$ . Answer is:  $(1+4)(0+4)(2+4)4(|3-4|)(|9-4|) \Rightarrow 546415$

**Example 2:**  $N=4329$ ,  $P=1$ . Answer is:  $(4+9)(3+9)(2+9)9 \Rightarrow (13)(12)(11)9 \Rightarrow 3219$

**INPUT:** There will be 5 sets of data. Each set contains two positive integers:  $N$  and  $P$ .  $N$  will be less than  $10^{15}$ , and  $P$  will be valid. No input will cause an output to have a leading digit of 0.

**OUTPUT:** The transformed value of each input set. The printed number may not have any spaces between the digits.

**SAMPLE INPUT:** (<http://www.datafiles.acsl.org/2020/contest1/int-sample-input.txt>)

```
296351 5
762184 3
45873216 7
19750418 6
386257914 5
```

**SAMPLE OUTPUT:**

1. 193648
2. 873173
3. 95322341
4. 86727361
5. 831752441



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## TEST DATA

### TEST INPUT:

4318672 4  
35197545 1  
975318642 9  
9876543210 5  
314159265358 10

### TEST OUTPUT:

1. 2198216
2. 80642095
3. 924681357
4. 3210941234
5. 754315221114