

# British Informatics Olympiad Final

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## Large Numbers

Most programming languages provide support for positive integer arithmetic, but they normally have some upper limit on the size of the integers which can be manipulated using these built-in operations. For instance, on most PC platforms, one can only manipulate numbers up to  $2^{32} - 1$  (or sometimes  $2^{64} - 1$ ) using the built in integer arithmetic operations. Nevertheless, it is possible to write a program which will manipulate much larger numbers.

Write a program which inputs two positive integers,  $m$  and  $n$ , and a single digit  $d$  (with  $1 \leq d \leq 9$ ), and outputs the number of times the digit  $d$  occurs in the decimal expansion of the product  $mn$ . The first line of the input will be a string of digits representing the integer  $n$ , terminated by a newline;  $n$  will not have more than 100 digits. The second line will similarly be a string representing  $m$ , which will also have no more than 100 digits, and the third line will consist of the single digit  $d$ .

### Sample Input

```
1234567
123456789123456789123456789
7
```

### Sample Output

```
16
```