
9. Multiplication

Program Name: Multiplication.java

Input File: multiplication.dat

Ms. Appleworth teaches third grade math at Ward Elementary School. Her next lesson is on multiplication of large numbers and she needs you to write a program that will show the finished multiplication problem so she can check her students' solutions more quickly.

For example, if she wants the students to multiply 256×123 , their solution would look like this:

```
  256
  123
  ---
 768
 512
 256
  ---
31488
```

You are to write a program that will print the subproducts and the final product for her. The subproducts in this problem, in the order created when performing a standard multiplication, are 768, 512, and 256. The final product is 31488.

Input

The first line of input will contain a single integer n that indicates the number of problems. Each of the following n lines will contain two positive integers r and s ($10 < s < r < 100,000$) separated by a space.

Output

For each problem, you will print the subproducts in standard multiplication order followed by the product on a single line and separated by a space.

Example Input File

```
4
256 123
89 23
15468 3564
24 15
```

Example Output to Screen

```
768 512 256 31488
267 178 2047
61872 92808 77340 46404 55127952
120 24 360
```