1996–97 # American Computer Science League — Contest #1

Intermediate Division — PROGRAMMING

"The Biggest"

Problem: The Mighty Modulas have been at it again: They've been given index cards printed with numbers, and they've torn each card between the digits. Your job, as virtual leader of the Mighty Modulas, is to teach your charges how to tear each card so that the numbers on all the scraps add up as close as possible to some given target number without going over.

For example, if you were targeting 1,000, then a card with the number 19967 on it would be torn once, between the two nines: $19 + 967 = 986$. Tearing between the 1 and 9 and between the 6 and 7 would result in 3 scraps containing the numbers 1, 996, and 7, which totals $1+996+7 = 1004$. If you were targeting for 100, then you'd tear twice, between the two nines and between the nine and the six, and the scraps would total $19 + 9 + 67 = 95$.

You'll be given 5 sets of data. Each set consists of two numbers, the *number on a card* (a positive integer less than 10,000) and the *target* number. You are to figure out how to tear the card such that the torn scraps add up as close as possible to the target number without going over. Print out the total of the torn scraps.

Sample Input:

Line #1: `4721, 75`
Line #2: `4721, 100`
Line #3: `1234, 20`
Line #4: `1234, 100`
Line #5: `1234, 127`

Sample Output:

Output #1: `68`
Output #2: `77`
Output #3: `19`
Output #4: `46`
Output #5: `127`

A Reminder: The gist of the ACSL rules are as follow: You have 72 hours to complete the program and test it on your own data. You may use any computer you can access (and have permission to use!), and you must work alone. Your program is run just once with the ACSL Test Data. This means that your program must accept all the data without ending. Because the test data becomes more difficult towards the end, we suggest that you output answers as you compute them. Hardcopy of the program of all students scoring a perfect 10 must be sent to ACSL. (Some of these programs will appear in the ACSL Newsletter, so be sure to document your code and to include your name, school, and division!) *Good luck!*

1996–97 **American Computer Science League** Contest #1

Intermediate Division — TEST DATA

"The Biggest"

Test Input:

Line #1: `5837, 600`

Line #2: `5837, 585`

Line #3: `2999, 300`

Line #4: `2000, 2`

Line #5: `205, 10`

Test Output:

Output #1: `590`

Output #2: `95`

Output #3: `128`

Output #4: `2`

Output #5: `7`