

Multiplication Hacks and Tricks

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1 Introduction

Are you looking for tricks that can make arithmetic calculations easier for you. The following document discusses some very simple and easy to remember mathematical tricks that can come in handy when multiplying two digit numbers.

2 Trick number 1

Suppose you have to multiply two natural numbers between 1 and 100 whose first digits are the same and the sum of their second digit is 10. Multiplying them in the conventional way takes up time and space, and there exists a very simple trick for this problem. By this trick, the multiplication of two 2-digit numbers can be reduced to multiplication of single digit numbers and additions involving one digit.

2.1 Algorithm

```
input  $n_1, n_2$ 
1: if  $(n_1 < 0)$  or  $(n_1 > 100)$  or  $(n_2 < 0)$  or  $(n_2 > 100)$  then
2:   Exit
3: end if
4: if  $(n_1/10 \neq n_2/10)$  or  $((n_1 \bmod 10) + (n_2 \bmod 10) \neq 10)$  then
5:   Exit
6: end if
7:  $d_1 \leftarrow n_1/10$ 
8:  $d_2 \leftarrow n_1 \bmod 10$ 
9:  $\text{prod} \leftarrow (100 * d_1 * (d_1 + 1)) + (d_2 * (10 - d_2))$ 
10:
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3 Bibliography