

# The 1089 Force

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**Effect:** If you follow the outlined procedure below, you will always end up with the number 1089.

## Procedure:

- (1) Think of any 3-digit number where the digits are all different (like 542, and NOT 332).
- (2) Reverse the digits of that number to obtain a new number.
- (3) Subtract the smaller of the two numbers from the larger one.
- (4) Make sure to write down your answer as a 3-digit number. If it's 78 for instance, write it as 078.
- (5) Reverse the digits of this new 3-digit number, leaving you with another number.
- (6) Add these last two numbers together.

## Notes:

- In Step 1, you actually only need to ensure that the first and last digits are different. Otherwise the number would be the same as its reverse, so subtracting would give you zero. The wording above is just easier to communicate, without seeming to really limit freedom of choice.
- After Step 3, the number you end up with will be of the form  $ABC$ , where  $B = 9$  and  $A + C = 9$ , such as 396. That's the real secret. You should think about why this is true.
- You get the number  $99 = 099$ , precisely when your original first digit and last digit differ by 1. This is why we need Step 4 to make sure it works for that case as well.
- One other way to handle the special case of 99 is to simply ensure it never occurs. Start off by having a spectator think of 3 different random digits and write them in decreasing order to form a number. Then you can just subtract its reverse and you'll always end up with a 3-digit answer.