

*Where should you start, if you want to finish back where you started?*

Alison chose a two-digit number, divided it by 2, multiplied the answer by 9, and then reversed the digits.

Her answer was the same as her original number!

**Can you find the number she chose?**

Then she chose another two-digit number, added 1, divided the answer by 2, and then reversed the digits.

Again, her answer was the same as her original number!

**Can you find the number she chose this time?**

Charlie chose a two-digit number, subtracted 2, divided the answer by 2, and then reversed the digits.

His answer was the same as his original number!

**What was Charlie's number?**

Choose a number, subtract 10, divide by 2 and reverse the digits.

**What number should you start with so that you finish with your original number?**

**Extension:**

Choose a 3-digit number where the last two digits sum to the first (e.g. 615).

Rotate the digits one place, so the first digit becomes the last (so for the example, we get 156).

Subtract the smallest number from the largest and divide by 9 (which is always possible).

**What do you notice about the result? Can you explain why?**