

I am thinking of a three-digit number.

- When it is divided by 9, the remainder is 3.
- When it is divided by 2, the remainder is 1.
- When it is divided by 5, the remainder is 4.

What is my number?

If there is a remainder of 4 when dividing by 5, the ones digit must be 4 or 9. If there is a remainder of 1 when dividing by 2, the number must be odd so the ones digit must be 9. In a multiple of 9, the digits always add up to a multiple of 9. Possible answers: 129, 219, 309, 399, 489, 579, 669, 759, 849, 939

$$765 \div 4 = 191 \text{ remainder } 1$$
$$876 \div 5 = 175 \text{ remainder } 1$$

Does a three-digit number descending in digits divided by the next descending digit always have remainder 1?

Prove your answer.

This does not always have the remainder of 1.

$$543 \div 2 = 271 \text{ r}1$$

However:

$$987 \div 6 = 164 \text{ r}3$$

$$654 \div 3 = 218$$