

Find the sum of all the integers between 100 and 1000 that are divisible by 9

The first integer after 100 divisible by 9 = 108

$$U_1 = 108$$

The last integer before 1000 divisible by 9 = 999

$$U_n = 999$$

The common difference = 9

How many terms in the sequence?

$$U_n = U_1 + (n - 1)d$$

$$999 = 108 + 9(n - 1)$$

$$891 = 9(n - 1)$$

$$99 = n - 1$$

$$n = 100$$

Find the sum to 100 terms

$$S_n = \frac{n}{2}(2U_1 + (n - 1)d)$$

$$S_n = \frac{100}{2}(2 \times 108 + 99 \times 9)$$

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$$S_n = 55\,350$$