U7D4 MCR 3UI **Arithmetic Series**

An arithmetic series is the _____ of the terms of an arithmetic sequence.

If the sequence is $t_1, t_2, t_3, t_4, \ldots, t_n$,
then the series is $S_1, S_2, S_3, S_4, \ldots, S_n$
where :

$$s_1 = t_1$$
$$s_2 = t_1 + t_2$$
$$s_3 = t_1 + t_2 + t_3$$
$$s_4 = t_1 + t_2 + t_3 + t_4$$
. . .

In general,

$$s_n = \frac{n}{2}\left[2a + (n-1)d\right]$$

a is

d is

n is

Or the formula can be written as :

$$s_n = \frac{n}{2}\left[2a + (n-1)d\right]$$
$$s_n = \frac{n}{2}\left[a + a + (n-1)d\right]$$
$$s_n = \frac{n}{2}\left[t_1 + t_n\right]$$
$$s_n = n\left[\frac{t_1 + t_n}{2}\right]$$

And so, we have two different versions of the same formula.

Examples:

1. Find the sum of the first 100 terms of 8 + 11 + 14 + . . .

2. Find the sum of 1.1 + 1.2 + 1.3 + 1.4 + . . . + 8.9

3. If the sum of n terms of a sequence is given by $S_n = n^2 + n$, find t_{11}.

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