

Subject:

Year:

Month:

Day:

$$a_1 + a_1 q + a_1 q^2 + a_1 q^3 + \dots$$

$$a_1 q - a_1 \quad a_1 q^2 - a_1 q \quad a_1 q^3 - a_1 q^2 \quad \dots$$

$$a_1 (q-1) + a_1 q (q-1) + a_1 q^2 (q-1) + \dots$$

q is the common ratio

$$a_1 + (a_1 + d) + (a_1 + 2d) + (a_1 + 3d) + \dots + (a_1 + (n-1)d) = \frac{(n-1)n}{2} = \frac{n^2 - n}{2}$$

(will do)

$$na_1 + \frac{n(n-1)}{2}d = \frac{n}{2}(2a_1 + (n-1)d)$$

$$S_n = na_1 + a_1 q + a_1 q^2 + \dots + a_1 q^{n-1} \rightarrow a_1 q^{n-1} \rightarrow a_1 q^n = a_1 q + a_1 q^2 + \dots + a_1 q^n$$

(b)

$$(q-1)S_n = aq^n - a \rightarrow a(q^n - 1) \rightarrow q \neq 1 \implies S_n = \frac{a(q^n - 1)}{q-1} \implies q=1 \implies a + a + \dots + a = na$$

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