KEY

More Practice: Recursive Formulas

For **ALL** of the given sequences,

A. State whether they are arithmetic, geometric or neither.

For the **Arithmetic and Geometric** sequences:

B. Write an explicit formula for the sequence.

C. Write a recursive formula for the sequence.

G 1. 4, 12, 36, 108, ... (×3, ×3) $a_n = 4 \cdot 3^{n-1}$ $a_1 = 4$ $a_n = 3 \cdot a_{n-1}$

G 2. 1.2, 0.6, 0.3, 0.15, ... (×.5, ×.5) $a_n = 1.2(.5)^{n-1}$ $a_1 = 1.2$ $a_n = .5\,a_{n-1}$

A 3. 5, 11, 17, 23, ... (+6, +6) $a_n = 5 + 6(n-1)$ $a_1 = 5$ $a_n = a_{n-1} + 6$

A 4. 2.1, 2.5, 2.9, 3.3, ... (+.4, +.4) $a_n = 2.1 + .4(n-1)$ $a_1 = 2.1$ $a_n = a_{n-1} + .4$

A 5. 4, 1, –2, –5 ... (-3, -3) $a_n = 4 - 3(n-1)$ $a_1 = 4$ $a_n = a_{n-1} - 3$

N 6. $\frac{6}{5}, \frac{5}{7}, \frac{4}{9}, \frac{3}{11}, \ldots$ $a_n = \frac{6-1(n-1)}{5+2(n-1)}$?

N 7. 2, −3, 4, −5, ... $a_n = (-1)^{n-1} \cdot (n+1)$ $a_1 = 2$ $a_n = (-1)[a_{n-1} + 1]$

A 8. $\frac{1}{12}, \frac{1}{4}, \frac{5}{12}, \frac{7}{12}, \ldots$ (+2/12, 3/12) $a_n = \frac{1}{12} + \frac{1}{6}(n-1)$ $a_1 = \frac{1}{2}$ $a_n = a_{n-1} + \frac{1}{6}$

G 9. $x, x^2, x^3, x^4, \ldots$ (×X, ×X) $a_n = x^n$ $a_1 = x$ $a_n = x \cdot a_{n-1}$

A or G 10. 0, 0, 0, 0, ... (+0 or ×0) $a_n = 0 + 0(n-1)$ $a_1 = 0$ $a_n = a_{n-1} + 0$

or $a_n = 0 \cdot 0^{n-1}$ $a_1 = 0$ $a_n = 0 \cdot a_{n-1}$