

LESSON 1 CLASSWORK - EXTRA PRACTICE

NAME Key

Describe each pattern formed. Find the next three terms.

1. 80, 77, 74, 71, 68,

2. 100, 10, 1, 0.1, 0.01,

3. 4, -8, 16, -32, 64,

-3 65, 62, 59 $\div 10$.001, .0001, .00001 $\times -2$ -128, 256, -512

Write a recursive formula for each sequence. Then find the next term.

4. -2, -1, 0, 1, 2, ... +1

$a_1 = -2$
 $a_n = a_{n-1} + 1$

5. 40, 20, 10, 5, $\frac{5}{2}$, ... \div by 2

$a_1 = 40$
 $a_n = a_{n-1} \div 2$ or $a_n = \frac{a_{n-1}}{2}$

6. 6, 1, -4, -9, ... -5

$a_1 = 6$
 $a_n = a_{n-1} - 5$

7. $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \frac{1}{32}, \dots$ \div by 2

$a_1 = \frac{1}{2}$
 $a_n = a_{n-1} \div 2$ or $a_n = \frac{a_{n-1}}{2}$

Write an explicit formula for each sequence. Then find a_{12} .

8. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \dots$ *not arithmetic*

$a_n = \frac{1}{n+1}$

$a_{12} = \frac{1}{12+1}$

$a_{12} = \frac{1}{13}$

10. 100, 96, 92, 88,

$a_n = 100 + (n-1)(-4)$
 $a_n = 100 - 4n + 4$

$a_n = -4n + 104$

$a_{12} = -4(12) + 104$

$a_{12} = 56$

9. 4, 7, 10, 13, 16, ... +3

$a_n = 4 + (n-1)(3)$

$a_n = 4 + 3n - 3$

$a_n = 3n + 1$

$a_{12} = 3(12) + 1$

$a_{12} = 37$

11. $-2\frac{1}{2}, -2, -1\frac{1}{2}, -1, \dots$ $+\frac{1}{2}$

$a_n = -2.5 + (n-1)(\frac{1}{2})$

$a_n = -2.5 + \frac{1}{2}n - \frac{1}{2}$

$a_n = \frac{1}{2}n - 3$

$a_{12} = \frac{1}{2}(12) - 3$

$a_{12} = 3$

Decide whether each formula is EXPLICIT or RECURSIVE. Then find the first 5 terms of each sequence.

12. $a_n = 2a_{n-1} + 3$ where $a_1 = 3$ RECURSIVE

$a_1 = 3$

$a_2 = 2(3) + 3 = 9$

$a_3 = 2(9) + 3 = 21$

$a_4 = 2(21) + 3 = 45$

$a_5 = 2(45) + 3 = 93$

13. $a_n = \frac{1}{2}(n)(n-1)$ EXPLICIT

$a_1 = \frac{1}{2}(1)(1-1) = 0$

$a_2 = \frac{1}{2}(2)(2-1) = 1$

$a_3 = \frac{1}{2}(3)(3-1) = 3$

$a_4 = \frac{1}{2}(4)(4-1) = 6$

$a_5 = \frac{1}{2}(5)(5-1) = 10$

14. $a_n = 2n^2 + 1$ EXPLICIT

$a_1 = 2(1)^2 + 1 = 3$

$a_2 = 2(2)^2 + 1 = 9$

$a_3 = 2(3)^2 + 1 = 19$

$a_4 = 2(4)^2 + 1 = 33$

$a_5 = 2(5)^2 + 1 = 51$

15. $a_n = -3a_{n-1}$ where $a_1 = -2$ RECURSIVE

$a_1 = -2$

$a_2 = -3(-2) = 6$

$a_3 = -3(6) = -18$

$a_4 = -3(-18) = 54$

$a_5 = -3(54) = -162$