

Name: _____

Date: _____

QUARTER 3 REVIEW QUESTIONS!

1. If $f(1) = 8$ and $f(n) = \frac{1}{2}f(n-1) + 2$ then which of the following is the value of $f(3)$?

- (1) 5
- (2) 7
- (3) 3
- (4) 6

$$f(2) = \frac{1}{2}f(2-1) + 2$$

$$f(2) = \frac{1}{2}f(1) + 2$$

$$f(1) = 8$$

$$\frac{1}{2}(8) + 2$$

* When we see

"n-1" think

Recursive

2. The first two terms of an arithmetic sequence are 6 and 11, respectively. Which of the following represents the 14th term of the sequence?

- (1) 71
- (2) 66
- (3) 76
- (4) 61

$$6, 11, 16, 21, 26$$

+5 +5

$$a_n = a_1 + d(n-1)$$

$$a_{14} = 6 + 5(14-1)$$

$$a_{14} = 6 + 5(13)$$

$$= 71$$

3. Given the arithmetic sequence shown below, write a recursive rule for the sequence.

-4, 4, 12, 20, ...

$$a_1 = -4$$

$$a_n = a_{n-1} + d$$

$$a_n = a_{n-1} + 8$$

4. A sequence is defined by the recursive formula $a_1 = -6$ and $a_n = a_{n-1} + 2n$. Write out the next three terms of this sequence. Show the work that leads to your terms.

5. Write the first five terms of each sequence:

a) $a_1 = -1$
 $a_n = -3a_{n-1}$ -1, 3, -9, 27, -81

b) $a_1 = 2$
 $a_n = 2a_{n-1} - 3$ 2, 1, -1, -5, -13

6. Factor:

a. $4x^2 - 16$
 $(2x+4)(2x-4)$

b. $20x^2 - 36x$
 $4x(5x-9)$ GCF!

c. $x^2 - 7x + 10$
 $(x-2)(x-5)$ AM method

7. Write both an explicit and recursive rule for the following sequence: 2, -6, 18, -54, 162, ...

8. The number of carbon atoms in a fossil is given by the function $y = 5100(0.95)^x$, where x represents the number of years since the fossil has been discovered. What is the percent of change each year? What is the original number of carbon atoms? **Explain** how you arrived at each answer.

less than 1
↓ (1 - .05)
(.95)
5% decrease
5100 → original amount

9. Are the below sequences arithmetic, geometric, or neither? If they are arithmetic/geometric, state the value of d or r on the 2nd line.

a) 8, 20, 50, 125, ... _____

b) 1.3, 3.8, 6.3, ... _____

10. Find the difference when the polynomial $-5x^2 + 3x + 8$ is subtracted from the polynomial $2x^2 + 4x + 1$.

11. Write the product below in standard polynomial form. Show the steps that you use in simplifying the product.

$$(x+8)(x-3)(2x+1)$$