

Extra Practice with Sequences

Name Key Class Period \_\_\_\_\_

Write the explicit rule for each sequence:

1. 5, 7, 9, 11, 13, ...  $d=2$   $a_0=3$

$$a_n = 2n + 3$$

2. 8, 6.5, 5, 3.5, 2, ...  $d=-1.5$   $a_0=9.5$

$$a_n = -1.5n + 9.5$$

3. 10, 50, 250, 1,250, ...  $r=5$

$$a_n = 10(5)^{n-1}$$

4. -9, -2, 5, 12, 19, ...  $d=7$   $a_0=-16$

$$a_n = 7n - 16$$

5. 1,080, 360, 120, 40, ...  $r=\frac{1}{3}$

$$a_n = 1080\left(\frac{1}{3}\right)^{n-1}$$

6. 6, 12, 24, 48, ...  $r=2$

$$a_n = 6(2)^{n-1}$$

Find the nth term for each sequence:

7.  $a_1 = -5$ ,  $d = 4$ ,  $n = 9$

$$a_n = 4n - 9$$

$$a_9 = 27$$

8.  $a_1 = 13$ ,  $d = -5/2$ ,  $n = 29$

$$a_n = -\frac{5}{2}n + \frac{31}{2}$$

$$a_{29} = -57$$

9.  $a_1 = 3$ ,  $r = -4$ ,  $n = 6$

$$a_n = 3(-4)^{n-1}$$

$$a_6 = -3072$$

10.  $a_1 = 800$ ,  $r = 1/2$ ,  $n = 10$

$$a_n = 800\left(\frac{1}{2}\right)^{n-1}$$

$$a_{10} = \frac{25}{16} \text{ or } 1.5625$$

Complete each statement:

11. 97 is the 26th term of:  
-3, 1, 5, 9

$$a_n = 4n - 7$$

$$a_{26} = 97$$

$$\begin{aligned} 97 &= 4n - 7 \\ 104 &= 4n \\ 26 &= n \end{aligned}$$

12. 0.0078125 is the 15th term of:  
128, 64, 32, 16,

$$a_n = 128\left(\frac{1}{2}\right)^{n-1} \quad 0.0078125 = 128\left(\frac{1}{2}\right)^{n-1}$$

$$14 = n - 1$$

$$n = 15$$

$$0.00006104 = \left(\frac{1}{2}\right)^{n-1}$$

Write the formula for the sequence that represents the following scenarios:

13. After making his first deposit, Paul has \$758 in his checking account. The next month, the balance is \$836. The balance after the third month is \$914.

758, 836, 914, ...

$d = 78$

Formula:  $a_n = 78n + 680$

14. The table shows the number of people at a school who caught the flu each month after the flu shot was given:

Month	1	2	3	4	5
# of People	5	15	45	135	405

$r = 3$

Formula:  $a_n = 5(3)^{n-1}$

15. The first term in an arithmetic sequence is 5. The fourth term in the sequence is -4. The tenth term is -22. Which function can be used to find the nth term of the arithmetic sequence?

- a.  $F(n) = -n$
- b.  $F(n) = n + 4$
- c.  $F(n) = -3n + 8$
- d.  $F(n) = \frac{1}{2}(n + 5) + 2$

$a_1 = 5$   
 $a_4 = -4$   
 $a_{10} = -22$

16. Which formula represents the sequence in the table?

- a.  $a_n = 2n + 1$
- b.  $a_n = n/2 - 1$
- c.  $a_n = 2n - 1$
- d.  $a_n = n/2 + 1$

n	3	6	10	15
$a_n$	2.5	4	6	8.5

17. If the first picture has 4 dots, the second picture has 9 dots and the third picture has 16 dots, how many dots would be in the 6th picture?

- a. 25
- b. 36
- c. 49
- d. 64

4, 9, 16, ...  
 $2^2$   $3^2$   $4^2$

18. Find the 38th term of 103, 99, 95, ...

- a. -45
- b. -152
- c. -49
- d. 45

$a_n = -4n + 107$   
 $a_{38} = -4(38) + 107$