

## Chapter 7 Review

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Period: \_\_\_\_\_

Tell whether the sequence is *arithmetic*, *geometric*, or *neither*. Explain.

1. 5, 9, 13, 17, ...      2. 3, 6, 12, 24, ...      3. 40, 10,  $\frac{5}{2}$ ,  $\frac{5}{8}$ , ...      4. 4, 7, 12, 19, ...

Write the first six terms of the sequence.

5.  $a_n = 6 - n^2$       6.  $a_n = 7n^3$       7.  $a_1 = 4$   
 $a_n = 5a_{n-1}$       8.  $a_1 = -1$   
 $a_n = a_{n-1} + 6$

Write the next term of the sequence, and then write a rule for the  $n$ th term.

9. 5, 11, 17, 23, ...      10. 3, 15, 75, 375, ...      11.  $\frac{6}{5}, \frac{7}{10}, \frac{8}{15}, \frac{9}{20}, \dots$       12. 1.6, 3.2, 4.8, 6.4, ...

Find the sum of the series.

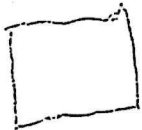
13.  $\sum_{i=1}^{48} i$       14.  $\sum_{n=1}^{28} n^2$       15.  $\sum_{i=1}^{10} (4i - 9)$       16.  $\sum_{i=1}^{19} (2i + 5)$   
17.  $\sum_{i=1}^5 9(2)^{i-1}$       18.  $\sum_{i=1}^6 12\left(\frac{1}{3}\right)^{i-1}$       19.  $\sum_{i=1}^{\infty} 8\left(\frac{3}{4}\right)^{i-1}$       20.  $\sum_{i=1}^{\infty} 20\left(\frac{3}{10}\right)^{i-1}$

Write the repeating decimal as a fraction in lowest terms.

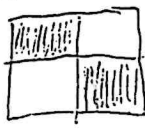
21. 0.111...      22. 0.464646...      23. 0.187187187...      24. 0.3252525...

Write a recursive rule for the sequence.

25. 2, 12, 72, 432, ...      26. 3, 10, 17, 24, ...      27. 135, 45, 15, 5, ...      28. 1, -3, 9, -27, ...

32. **QUILTS** Use the pattern of checkerboard quilts shown.

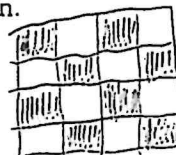
$$n = 1, a_n = 1$$



$$n = 2, a_n = 2$$



$$n = 3, a_n = 5$$



$$n = 4, a_n = 8$$

- a. What does  $n$  represent for each quilt? What does  $a_n$  represent?  
b. Make a table that shows  $n$  and  $a_n$  for  $n = 1, 2, 3, 4, 5, 6, 7$ , and 8.  
c. Use the rule  $a_n = \frac{n^2}{2} + \frac{1}{4}[1 - (-1)^n]$  to find  $a_n$  for  $n = 1, 2, 3, 4, 5, 6, 7$ , and 8. Compare these values with the results in your table. What can you conclude about the sequence defined by this rule?

33. **AUDITIONS** Several rounds of auditions are being held to cast the three main parts in a play. There are 3072 actors at the first round of auditions. In each successive round of auditions, one fourth of the actors from the previous round remain. Find a rule for the number  $a_n$  of actors in the  $n$ th round of auditions. For what values of  $n$  does your rule make sense?