

Name: _____ Date: _____ Period: _____

NOT HOMEWORK

Chapter 10 Study Guide

Determine whether each sequence is arithmetic. Explain your reasoning.

1. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \dots$

2. $\frac{2}{9}, \frac{5}{9}, \frac{8}{9}, \frac{11}{9}, \dots$

3. $14, -5, -19, \dots$

Find the next four terms in each arithmetic sequence. Then graph the sequence.

4. $\frac{2}{3}, -\frac{1}{3}, -\frac{4}{3}, \dots$

5. $-5, -11, -17, -23, \dots$

6. $10, 2, -6, -14, \dots$

Determine whether each sequence is geometric. Explain your reasoning.

7. $\frac{1}{2}, -\frac{1}{4}, 1, -\frac{1}{2}, \dots$

8. $21, 14, 7, \dots$

9. $-27, 18, -12, \dots$

Find the next three terms in each geometric sequence. Then graph the sequence.

10. $\frac{1}{3}, 1, 3, 9, \dots$

11. $0.125, -0.5, 2, \dots$

12. $64, 48, 36, \dots$

Determine whether each sequence is arithmetic, geometric, or neither. Explain your reasoning.

13. $\frac{5}{2}, 3, \frac{7}{2}, 4, \dots$

14. $12, 36, 108, 324, \dots$

15. $6, 9, 14, 21, \dots$

Find the indicated term of each arithmetic sequence.

16. $a_1 = -18, d = 12, n = 16$

18. $a_1 = 9, d = 24, n = -6$

17. a_{15} for $-5, -12, -19, \dots$

19. a_{24} for $8.25, 8.5, 8.75, \dots$

Write an equation for the n th term of each arithmetic sequence.

20. $a_7 = 21, d = 5$

21. $31, 17, 3, \dots$

22. $a_6 = 22, d = 9$

Find the arithmetic means of each sequence.

23. $-6, \quad , \quad , \quad , 49$

24. $84, \quad , \quad , \quad , 39$

25. $-28, \quad , \quad , \quad , 7$

Find the sum of each arithmetic series.

26. $-18, -15, -12, \dots, 66$

28. $a_1 = -16, d = 24, n = -6$

27. $-24, -18, -12, \dots, 72$

29. $a_n = 154, d = 8, n = 19$

Find the first three terms of each arithmetic series.

30. $a_1 = 48, a_n = 180, S_n = 1368$

32. $a_1 = -72, a_n = 453, S_n = 6858$

31. $n = 30, a_n = 362, S_n = 4770$

33. $a_1 = 19, n = 44, S_n = 9350$

Find the sum of each arithmetic series.

34. $\sum_{l=1}^{16} (4l - 2)$

35. $\sum_{b=4}^{13} (4b + 1)$

36. $\sum_{r=0}^{12} (-3r + 2)$

Find the indicated term of each geometric sequence.

37. $a_1 = 2400, r = \frac{1}{4}, n = 7$

38. $a_1 = 800, r = \frac{1}{2}, n = 6$

Write an equation for the n th term of each geometric sequence.

34. $a_6 = 0.5, r = 6$

35. $288, -96, 32, \dots$

36. $a_4 = -8, r = 0.5$

Find the geometric means of each sequence.

37. $810, \quad , \quad , 10$

38. $640, \quad , \quad , 2.5$

39. $\frac{729}{64}, \quad , \quad , \frac{324}{9}$

Find the sum of each geometric series.

20. $a_1 = 16, r = \frac{1}{2}, n = 9$

22. $a_1 = 36, r = \frac{1}{3}, n = 8$

21. $a_1 = 360, r = \frac{4}{3}, n = 8$

23. $a_1 = 240, r = \frac{3}{4}, n = 7$

Find the first term of each geometric series.

24. $r = 3, n = 6, S_n = -2912$

26. $r = \frac{2}{3}, a_n = 128, S_n = 4118$

25. $r = \frac{3}{2}, a_n = 486, S_n = 1330$

27. $a_n = 1875, n = 7, r = 5$

Find the sum of each geometric series.

37. $\sum_{l=1}^7 4(-3)^{l-1}$

38. $\sum_{b=1}^8 (-3)(-2)^{b-1}$

39. $\sum_{r=1}^9 (-1)(4)^{r-1}$

Solve each word problem.

40. There are 24 seats in the front row of a theater. Each successive row contains two more seats than the previous row.
- Write a linear equation describing this situation.
 - How many seats are in the 13th row?
 - What row has 58 seats?
 - If there are 23 rows in the theater, how many total seats are in the theater?
41. John averages 123 total pins per game in his bowling league this season. He is taking bowling lessons and hopes to bring up his average by 8 pins each new season.
- Write an equation to represent the n th term of the sequence.
 - If the pattern continues, during what season will John average 187 per game?
 - Is it reasonable for this pattern to continue indefinitely? Explain.
42. When an object is in free fall and air resistance is ignored, it falls 16 feet in the first second, an additional 48 feet during the next second, and 80 feet during the third second. How many feet will the object fall in 10 seconds?
43. Terry currently earns \$28,000 per year. If Terry expects a \$4000 raise every year, after how many years will he have a salary of \$100,000 per year?
44. A certain bacteria grows at a rate of 3 cells every 2 minutes. If there were 260 cells initially, how many are there after 21 minutes?