

# Practice 8-6

## Geometric Sequences

**Find the next three terms of each sequence.**

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|--|---|
| 1. 4, 12, 36, 108, ...   | 2. 2, -8, 32, -128, ...                                 |
| 3. $18, 9, \frac{9}{2}, \frac{9}{4}, \dots$                        | 4. $1, -\frac{1}{3}, \frac{1}{9}, -\frac{1}{27}, \dots$ |
| 5. -2, 20, -200, 2000, ...   | 6. $30, -10, \frac{10}{3}, -\frac{10}{9}, \dots$        |
| 7. $\frac{1}{3}, 1\frac{1}{3}, 5\frac{1}{3}, 21\frac{1}{3}, \dots$ | 8. $20, 4, \frac{4}{5}, \frac{4}{25}, \dots$            |
| 9. -100, -40, -16, -6.4, ...                                       | 10. 40, 20, 10, 5, ...                                  |

**Determine whether each sequence is arithmetic or geometric.**

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| 11. -8, -10, -12.5, -15.625, ...                         | 12. 5, 1, -3, -7, ...                         |
| 13. $1, \frac{2}{5}, \frac{4}{25}, \frac{8}{125}, \dots$ | 14. -0.2, -0.02, -0.002, -0.0002, ...         |
| 15. -10, -5, 0, 5, ...                                   | 16. $6, -3, \frac{3}{2}, -\frac{3}{4}, \dots$ |

**Write a rule for each sequence.**

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| 17. 4, 12, 36, 108, ...                      | 18. 2, -8, 32, -128, ...                                 |
| 19. $18, 9, \frac{9}{2}, \frac{9}{4}, \dots$ | 20. $1, -\frac{1}{3}, \frac{1}{9}, -\frac{1}{27}, \dots$ |
| 21. -2, 20, -200, 2000, ...                  | 22. $30, -10, \frac{10}{3}, -\frac{10}{9}, \dots$        |
| 23. 1, 4, 16, 64, ...                        | 24. 6, 12, 24, 48, ...                                   |
| 25. 125, 25, 5, 1, ...                       | 26. 50, 25, 12.5, 6.25, ...                              |

**Find the first, fourth, and eighth terms of each sequence.**

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|--------------------------------|---------------------------------|--|
| 27. $A(n) = 2 \cdot 3^{n-1}$   | 28. $A(n) = 3 \cdot 4^{n-1}$    | 29. $A(n) = 3 \cdot 2^{n-1}$           |
| 30. $A(n) = -1 \cdot 5^{n-1}$  | 31. $A(n) = 4 \cdot 2^{n-1}$    | 32. $A(n) = \frac{1}{2} \cdot 2^{n-1}$ |
| 33. $A(n) = 0.1 \cdot 4^{n-1}$ | 34. $A(n) = -2.1 \cdot 3^{n-1}$ | 35. $A(n) = 10 \cdot 5^{n-1}$          |

**Write a rule and find the given term in each geometric sequence described below.**

36. What is the sixth term when the first term is 4 and the common ratio is 3?
37. What is the fifth term when the first term is -2 and the common ratio is  $-\frac{1}{2}$ ?
38. What is the tenth term when the first term is 3 and the common ratio is -1.2?
39. What is the fourth term when the first term is 5 and the common ratio is 6?
40. Suppose a manufacturer invented a computer chip in 1978 that had a computational speed of  $s$ . The company improves its chips so that every 3 years, the chip doubles in speed. What would the chip's speed have been for the year 2002? Write your solution in terms of  $s$ .