

# 9-3 Practice

Form G

**Determine whether each sequence is geometric. If so, find the common ratio.**

1. 3, 9, 27, 81, ...

2. 4, 8, 16, 32, ...

3. 4, 8, 12, 16, ...

4. 4, -8, 16, -32, ...

5. 1, 0.5, 0.25, 0.125, ...

6. 100, 30, 9, 2.7, ...

7. -5, 0, 5, 10, ...

8. 64, -32, 16, -8, ...

9. 1, 4, 9, 16, ...

**Find the tenth term of each geometric sequence.**

10. 2, 4, 8, ...

11. 1, 3, 9, ...

12. -2, 6, -18, ...

13. -3, 9, -27, ...

14. -3, -12, -48, ...

15. -5, 25, -125, ...

16.  $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \dots$

17. 0.3, 0.6, 1.2, ...

18.  $\frac{1}{4}, \frac{1}{2}, 1, \dots$

19. When a pendulum swings freely, the length of its arc decreases geometrically. Find each missing arc length.

a. 20th arc is 20 in.; 22nd arc is 18.5 in.

b. 8th arc is 27 mm; 10th arc is 3 mm

c. 5th arc is 25 cm; 7th arc is 1 cm

d. 100th arc is 18 ft; 98th arc is 2 ft

**Find the missing term of each geometric sequence. It could be the geometric mean or its opposite.**

20. 4, ■, 16, ...

21. 9, ■, 16, ...

22. 2, ■, 8, ...

23. 3, ■, 12, ...

24. 2, ■, 50, ...

25. 4, ■, 5.76, ...

26. 625, ■, 25, ...

27.  $\frac{1}{3}, \square, 3, \dots$

28. 0.5, ■, 0.125, ...

29. **Writing** Explain how you know that the sequence 400, 200, 100, 50 is geometric.

30. **Open-Ended** Write a geometric sequence of at least seven terms.

31. **Error Analysis** A student says that the geometric sequence 30, \_\_, 120 can be completed with 90. Is she correct? Explain.

**9-3****Practice** (continued)

Form G

Identify each sequence as *arithmetic*, *geometric*, or *neither*. Then find the next two terms.

32.  $9, 3, 1, \frac{1}{3}, \dots$

33.  $1, 0, -2, -5, \dots$

34.  $2, -2, 2, -2, \dots$

35.  $-3, 2, 7, 12, \dots$

36.  $1, -2, -5, -8, \dots$

37.  $1, -2, 3, -4, \dots$

Write an explicit formula for each sequence. Then generate the first five terms.

38.  $a_1 = 3, r = -2$

39.  $a_1 = 5, r = 3$

40.  $a_1 = -1, r = 4$

41.  $a_1 = -2, r = -3$

42.  $a_1 = 32, r = -0.5$

43.  $a_1 = 2187, r = \frac{1}{3}$

44.  $a_1 = 9, r = 2$

45.  $a_1 = -4, r = 4$

46.  $a_1 = 0.1, r = -2$

47. The deer population in an area is increasing. This year, the population was 1.025 times last year's population of 2537.

- Assuming that the population increases at the same rate for the next few years, write an explicit formula for the sequence.
- Find the expected deer population for the fourth year of the sequence.

48. You enlarge the dimensions of a picture to 150% several times. After the first increase, the picture is 1 in. wide.

- Write an explicit formula to model the width after each increase.
- How wide is the photo after the 2nd increase?
- How wide is the photo after the 3rd increase?
- How wide is the photo after the 12th increase?

Find the missing terms of each geometric sequence. (*Hint: The geometric mean of positive first and fifth terms is the third term. Some terms might be negative.*)

49.  $12, \blacksquare, \blacksquare, \blacksquare, 0.75$

50.  $-9, \blacksquare, \blacksquare, \blacksquare, -2304$

For the geometric sequence **6, 18, 54, 162, ...**, find the indicated term.

51. 6th term

52. 19th term

53.  $n$ th term