Practice and Problem Solving

= Step-by-Step Solutions begin on page R12.
Extra Practice begins on page 815.

Example 1
p. 580

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

14. 4, 1, 2, ...

15. 10, 20, 30, 40, ...

16. 4, 20, 100, ...

17. 212, 106, 53, ...

18. −10, −8, −6, −4, ...

19. 5, −10, 20, 40, ...

Example 2
p. 581

Find the next three terms in each geometric sequence.

20. 2, −10, 50, ...

21. 36, 12, 4, ...

22. 4, 12, 36, ...

23. 400, 100, 25, ...

24. −6, −42, −294, ...

25. 1024, −128, 16, ...

Example 3
p. 582

26. The first term of a geometric series is 1 and the common ratio is 9. What is the 8th term of the sequence?

27. The first term of a geometric series is 2 and the common ratio is 4. What is the 14th term of the sequence?

28. What is the 15th term of the geometric series −9, 27, −81, ...?

29. What is the 10th term of the geometric series 6, −24, 96, ...?

Example 4
p. 582

30. PENDULUM The first swing of a pendulum is shown. On each swing after that, the arc length is 60% of the length of the previous swing. Draw a graph that represents the arc length after each swing.
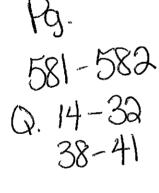

24 ft

31. Find the eighth term of a geometric sequence for which $a_3 = 81$ and $r = 3$.

32. MAPS At an online mapping site, Mr. Mosley notices that when he clicks a spot on the map, the map zooms in on that spot. The magnification increases by 20% each time.

a. Write a formula for the nth term of the geometric sequence that represents the magnification of each zoom level. (*Hint:* The common ratio is not just 0.2.)

b. What is the fourth term of this sequence? What does it represent?

H.O.T. Problems   Use Higher-Order Thinking Skills

38. CHALLENGE Write a sequence that is both geometric and arithmetic. Explain your answer.

39. FIND THE ERROR Haro and Matthew are finding the ninth term of the geometric sequence −5, 10, −20, ... Is either of them correct? Explain your reasoning.

Haro	Matthew
$r = \dfrac{10}{-5}$ or −2	$r = \dfrac{10}{-5}$ or −2
$a_9 = -5\,(-2)^{9-1}$	$a_9 = -5 \cdot (-2)^{9-1}$
$= -5(512)$	$= -5 \cdot -256$
$= -2560$	$= 1280$

40. REASONING Write a sequence of numbers that form a pattern but are neither arithmetic nor geometric. Explain the pattern.

41. OPEN ENDED Write a geometric sequence that has a common ratio of $\frac{3}{4}$.

~~**42. WRITING IN MATH** Summarize how to find a specific term of a geometric sequence.~~

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581 - 582
Q. 14 - 32
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