

LESSON
12-4

Practice B
Geometric Sequences and Series

Determine whether each sequence could be geometric or arithmetic. If possible, find the common ratio or difference.

1. 1.1, -3.3, 9.9, -29.7, 89.1, ...

2. -18, -7, 4, 15, 26, ...

3. 1, 2, 6, 24, 120, 720, ...

4. 3125, 2500, 2000, 1600, 1280, ...

Find the 10th term of each geometric sequence.

5. 1600, 800, 400, 200, ...

6. 0.0000001, 0.00001, 0.001, 0.1, ...

7. -64, 96, -144, 216, ...

8. 2, -6, 18, -54, ...

Find the 8th term of each geometric sequence with the given terms.

9. $a_3 = 12$ and $a_6 = 96$

10. $a_{15} = 100$ and $a_{17} = 25$

11. $a_{11} = -4$ and $a_{13} = -36$

12. $a_3 = -4$ and $a_5 = -36$

Find the geometric mean of each pair of numbers.

13. 2 and 8

14. 4 and 25

15. 2 and 3

Find the indicated sum for each geometric series.

16. S_7 for 14, 42, 126, 378, ...

17. $\sum_{k=1}^8 (-4)^{k-1}$

Solve.

18. Deanna received an e-mail asking her to forward it to 10 other people. Assume that no one breaks the chain and that there are no duplicate recipients. How many e-mails will have been sent after 8 generations, including Deanna's?

Reading Strategy

- a. 4
b. Add 4 to each term to get the next term.
c. 21
- a. -5
b. Subtract 5 from each term to get the next term.
c. 57
- a. 23
b. Possible answer: I looked at the numbers and found that the pattern is to add 12. So I added 12 to 11 to get 23.
- Possible answer: You could use the pattern and the common difference to find each term of the sequence up to $n = 15$.

LESSON 12-4

Practice A

- a. -384, -192, -96, -48
b. $\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2}$
c. Geometric; $r = \frac{1}{2}$
- Geometric; $r = 2.5$
- Arithmetic; $d = -8$
- Geometric; $r = -2$ 5. Neither
- Geometric; $r = 2$ 7. Neither
- a. $\frac{1}{5}$
b. $\frac{1}{3125}$, or 0.00032
- 18.75 10. 19,683
- 0.0000055 12. 972
- ± 20 14. ± 9
- ± 15
- a. \$31,026.56
b. \$251,557.85

Practice B

- Geometric; $r = -3$
- Arithmetic; $d = 11$ 3. Neither
- Geometric; $r = 0.8$ 5. 3.125
- 100,000,000,000
- 2460.375 8. -39,366
- 384 10. $\pm 12,800$
- $\pm \frac{4}{27}$ 12. ± 972
- ± 4 14. ± 10
- $\pm \sqrt{6}$ 16. 15,302
- 13,107 18. 111,111,111

Practice C

- $\frac{1296}{625}$, or 2.0736
- 4920.75 3. -1088
- 486 5. $\pm 139,968$
- $\pm \frac{1}{135}$ 7. ± 15
- ± 18 9. $\pm 5\sqrt{3}$
- $\pm 4\sqrt{17}$ 11. ± 33
- $\pm 12\sqrt{2}$ 13. -11,184,811
- 6187.01 15. About 31.97
- About 52.61 17. 5555.6
- a. \$11,113.20
b. \$41,377.20

Reteach

- Yes; $r = -2$ 2. Yes; $r = 3$
- No
- 2; -7; 8; $a_8 = 896$
- 3; 8; 8; $a_8 = 17,496$
- $160 = 80(r)^1$; $r = 2$
- 2; $80 = a_1(2^3)$; $a_1 = 10$
- 7; $a_7 = 10(2^6)$; $a_7 = 640$

Challenge

- 160, 80, 40 2. 7, 10, 13