



- 5 Basketball** You drop a basketball from a height of 2 meters. Each curved path has 56% of the height of the previous path. Using the height in centimeters, write a rule for the sequence. What height will the basketball reach at the top of the fourth path (when  $n = 4$ )? Round to the nearest tenth of a centimeter.

## EXERCISES

For more exercises, see *Extra Skill and Word Problem Practice*.

### Practice and Problem Solving

#### A Practice by Example

**Example 1**  
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Find the common ratio of each sequence.

1. 2, 8, 32, 128, ...      2. -3, -12, -48, -192, ...      3. 70, 7, 0.7, 0.07, ...  
4. 8, 20, 50, 125, ...      5. -80, 20, -5, 1.25, ...      6. 0.45, 0.9, 1.8, 3.6, ...



**Example 2**  
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Find the next three terms of each sequence.

7. 2.5, 5, 10, 20, ...      8. 3, 6, 12, 24, ...      9. 4, 6, 9, 13.5, ...  
10. -8, 4, -2, 1, ...      11. 225, 45, 9, 1.8 ...      12. -3, 6, -12, 24, ...

**Example 3**  
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Determine whether each sequence is *arithmetic* or *geometric*.

13. 2, 14, 98, 686, ...      14. 12, 8, 4, 0, ...      15. 9, -36, 144, -576, ...  
16. -5, -10, -15, -20, ...      17. 0.6, 1.3, 2, 2.7, ...      18. 9, 12, 16,  $21\frac{1}{3}$ , ...

**Example 4**  
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Find the first, fourth, and eighth terms of each sequence.

19.  $A(n) = 5 \cdot 3^{n-1}$       20.  $A(n) = -5 \cdot 3^{n-1}$       21.  $A(n) = 5 \cdot (-3)^{n-1}$   
22.  $A(n) = 0.5 \cdot 3^{n-1}$       23.  $A(n) = -2 \cdot 5^{n-1}$       24.  $A(n) = -1.1 \cdot (-4)^{n-1}$

**Example 5**  
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Write a rule and find the given term in each geometric sequence described below.

25. What is the fifth term when the first term is 6 and the common ratio is 0.5?  
26. What is the tenth term when the first term is -6 and the common ratio is 2?  
27. What is the fourth term when the first term is 7 and the common ratio is 1.1?  
28. What is the seventh term when the first term is 1 and the common ratio is -4?  
29. You drop a handball from a height of 1 meter. Each curved path has 64% of the height of the previous path.  
a. Write a rule for the sequence using centimeters. The initial height is when  $n = 1$ .  
b. What height will the ball reach at the top of the sixth path?

#### B Apply Your Skills

Find the next three terms of each sequence. Then write a rule for each sequence.

30. 216, 72, 24, 8, ...      31. 625, 125, 25, 5, ...  
32. 0.1, 0.9, 8.1, 72.9, ...      33. 16, -8, 4, -2, ...

#### Problem Solving Hint

For Exercises 30 and 31, making a list of the terms of a sequence, and their factors, can help you write a rule.



34. **Open-Ended** Write four terms of a geometric sequence. Then write a rule for your sequence.  
35. **Writing** How can you determine whether a sequence is arithmetic or geometric?