Geometric Sequences

Algebra 1 •Section 4.6

Name: _____	Date: _____	Score: _____ / 12

Quick Review and Helpful Hints

A function pairs each input with exactly one output. Pay attention to what the input means, what rule is being applied, and whether the question asks for a value, a rule, a domain, or an interpretation.

▷ **Example:** For $f(x) = 2x + 5$, find $f(4)$.
Work: Replace x with 4: $f(4) = 2(4) + 5 = 13$.

★ **Answer:** 13

Practice Problems

Solve each problem. Show enough work that another student could follow your thinking.

1. Find the next three terms: $3, 6, 12, \ldots$.

2. Find the common ratio of $80, 40, 20, 10, \ldots$.

3. Find a_n for $5, 15, 45, \ldots$.

4. Find a_6 if $a_1 = 4$ and $r = 2$.

5. Is $2, 5, 10, 17, \ldots$ geometric?

6. Find a_5 for $81, 27, 9, \ldots$.

7. Write a recursive rule for $6, 18, 54, \ldots$.

8. Which term of $2, 6, 18, \ldots$ is 162?

9. Find the next term after $1000, 200, 40, 8$.

10. Find a_n if $a_1 = 12$ and $r = -2$.

Word Problems

11. A bacteria culture starts at 400 and doubles each hour. Write the amount after h hours.

12. A car loses 15% of its value each year. Write the multiplier.

Answer Keys

1. $\boxed{24, 48, 96}$
2. $\boxed{\frac{1}{2}}$
3. $\boxed{a_n = 5 \cdot 3^{n-1}}$
4. $\boxed{128}$
5. $\boxed{\text{No}}$
6. $\boxed{1}$
7. $\boxed{a_1 = 6;\, a_n = 3a_{n-1}}$
8. $\boxed{5\text{th}}$
9. $\boxed{1.6}$
10. $\boxed{a_n = 12(-2)^{n-1}}$
11. $\boxed{400 \cdot 2^h}$
12. $\boxed{0.85}$

Step-by-Step Explanations

1. Here you multiply, not add — each term doubles, so keep timesing by 2.
2. Every term is half the one before, so the ratio that links them is $\frac{1}{2}$.
3. Begin at 5 and triple repeatedly; the exponent counts how many triples you've done.
4. To reach term 6 you double 5 times: $4 \cdot 2^5$ climbs to 128.
5. Dividing consecutive terms gives different ratios, and geometric sequences need one steady multiplier.
6. You're cutting by $\frac{1}{3}$ each step; after 4 cuts from 81 you whittle down to 1.
7. Kick off at 6, and to get any term just triple the one sitting right before it.
8. Tripling along the way: $2, 6, 18, 54, 162$ — and 162 lands in the 5th seat.
9. Each term is one-fifth of the last, so 8 shrinks to $8 \cdot \frac{1}{5} = 1.6$.
10. Same geometric template: first term 12, ratio -2, and that negative makes the signs flip-flop.
11. At hour zero you've got 400, then doubling every hour means multiplying by 2 another h times.
12. If 15% walks away, 85% stays behind — so each year you multiply by 0.85.

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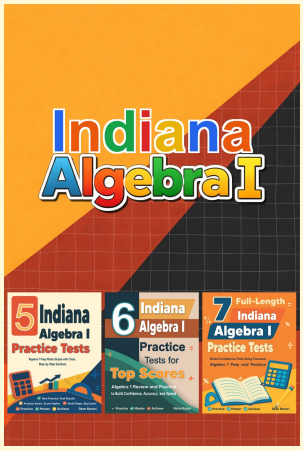

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