**Sets & Steps**
Math Practice & Worked Solutions

## Algebra 1

# Explicit Geometric Sequence Rules

Explicit Geometric Sequence Rules | A1-U07-P10

96 problems · Four activity formats



**Topic focus**

This topic is a focused set of 96 practice tasks on Explicit Geometric Sequence Rules.

**8 PDFs and a README; 54 buyer pages.**

The following pages use the same questions, given data, and notation as the final files. Question/card serial numbers and internal IDs are omitted in this preview only. Table values and matching responses are retained. Full answer keys are not included.

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**Algebra 1**

# Explicit Geometric Sequence Rules

**Name:** _____ **Date:** _____ **Class:** _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

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| | |
|---|---|
| Term 0 of a geometric sequence is 7. Every step doubles the preceding term. Give an explicit formula valid for whole-number indices. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.<br><br>Bank label: _____ | The fifth term is 9 and the common ratio is 1. Give an anchor-form rule for all positive indices. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.<br><br>Bank label: _____ |
| A two-sided integer-indexed geometric sequence satisfies $a_3 = -11$ and $r = 1$. State an anchor rule and its simplest equivalent form. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.<br><br>Bank label: _____ | A finite geometric sequence is indexed from 1 through 14, has $a_{10} = 1024$, and uses $r = \frac{1}{2}$. Give a single explicit expression on precisely that domain. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.<br><br>Bank label: _____ |
| The value at $n = 5$ is $-32$ in a geometric sequence with ratio $-2$. State a formula and explicitly retain the whole-number index domain. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.<br><br>Bank label: _____ | *Abi*-infinite geometric sequence is indexed by all integers, has $a_{-2} = 5$, and uses $r = 3$. Build the explicit rule from that negative-index anchor. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.<br><br>Bank label: _____ |
| State $a_n$ for integer $n \geq 6$ if $a_8 = \frac{1}{16}$ and the sequence advances by a factor of $-2$. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.<br><br>Bank label: _____ | For indices 1 through 9, build an anchor rule from $a_5 = \frac{3}{32}$ and $r = \frac{1}{2}$, then give an equivalent expression anchored at index 1. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.<br><br>Bank label: _____ |

**Algebra 1**

# Explicit Geometric Sequence Rules

**Name:** _____ **Date:** _____ **Class:** _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

| | |
|---|---|
| Let $m$ be a real number. A geometric sequence begins its stated domain at $n = 2$ with $a_2 = m$ and ratio 5. Give a formula that retains $m$ as a parameter. | Let $q$ be a nonzero real number. An integer-indexed geometric sequence has $a_0 = 8$ and ratio $q$. Give its explicit rule for every integer index. |
| For real parameter $c$, write the positive-index geometric sequence satisfying $a_4 = c$ and $r = -3$. | A positive-index geometric sequence has first term 8 and common ratio 0. Give an explicit rule that is valid at $n = 1$ without relying on $0^0$. |
| At time index 0 a discrete state is $-3$; every later state is obtained by multiplying the current state by 0. State its explicit value for all nonnegative indices, handling the initial index explicitly. | A sequence begins with $a_1 = 5$ and has common ratio 0; the observed $a_4 = 0$ is consistent with that rule. Write a complete explicit description rather than substituting into $5(0)^{n-1}$ at $n = 1$. |

**Algebra 1**

# Explicit Geometric Sequence Rules

**Name:** _____ **Date:** _____ **Class:** _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

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**Incoming:** $a_n = -81(-\frac{1}{3})^{n-6}, n \geq 1$.

For nonnegative integer $n$, describe the geometric sequence anchored by $a_0 = \frac{5}{2}$ with common ratio 6. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.

Your response: _____

**Incoming:** $A_n = 50(4)^{n-3}, n \geq 1$.

Indices 2 through 8 form a finite geometric list. Its index-3 entry is $-7$ and its ratio is $-4$. Give a rule only for those listed indices. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.

Your response: _____

**Incoming:** $R_n = 15(2)^{n-7}, n \geq 1$.

After discount round 2, a modeled price is 72 dollars. Every additional round retains $\frac{4}{5}$ of the preceding price, and rounds begin at 0. Write the round-$n$ sequence. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.

Your response: _____

**Incoming:** $a_n = 48(-\frac{1}{2})^{n-4}, n \geq 1$.

On the index domain $n \geq 4$, a geometric sequence has $a_7 = 2$ and $r = 3$. Write a rule whose exponent visibly counts from index 7. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.

Your response: _____

**Incoming:** $a_n = 160(\frac{3}{4})^{n-3}, n \geq 0$.

Form the nth-term expression for a geometric sequence with $a_6 = -81$ and $r = -\frac{1}{3}$. Its index set is $1, 2, 3, \ldots$ . Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.

Your response: _____

**Incoming:** $a_n = 6(5)^{n-4}, n \geq 1$.

A sequence indexed by $n = 0, 1, 2, \ldots$ has $a_2 = 12$ and common ratio $-2$. Express $a_n$ using the supplied anchor. Use the full requested explicit formula with its index domain, or the requested exact term value, as the matching response. Keep the original indexing and verification requirements.

Your response: _____

**Algebra 1**

# Explicit Geometric Sequence Rules

**Name:** _____ **Date:** _____ **Class:** _____

Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

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A geometric table begins with $(n,\ a_n) = (1, 3)$ and $(2, 6)$. Recover its explicit nth-term rule. Choose an explicit-rule construction method: anchor the formula at a supplied indexed term, or first recover the term at the stated starting index and anchor there. Explain which is more direct for these givens, use that method, and verify all supplied indexed terms and any sign restrictions. Retain every admissible rule if the data do not select one.

| Index n | Given value |
|---|---|
| 1 | 3 |
| 2 | 6 |

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The entries at indices $0$ and $1$ are $5$ and $15$ in a geometric sequence. Find $r$ and express $a_n$ for every nonnegative integer $n$. Choose an explicit-rule construction method: anchor the formula at a supplied indexed term, or first recover the term at the stated starting index and anchor there. Explain which is more direct for these givens, use that method, and verify all supplied indexed terms and any sign restrictions. Retain every admissible rule if the data do not select one.

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# Explicit Geometric Sequence Rules

## Full Worked Solutions - excerpt

### Worked example

**Problem.** Decide whether $a_n = 2(-1)^{n-1}$ and $b_n = -2(-1)^n$ produce the same alternating values at matching positive indices.

**Answer.** Yes, they are identical on $n \geq 1$.

**Explanation and check.**

Multiplying $(-1)^n$ by $-1$ is the same as lowering the exponent by one: $-2(-1)^n = 2(-1)^{n-1}$.

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### Worked example

**Problem.** Construct the positive-index rule satisfying $a_3 = -4$, $a_5 = -16$, and $r > 0$.

**Answer.** $a_n = -4(2)^{n-3}, n \geq 1$.

**Explanation and check.**

The two-step relation yields $r^2 = 4$, with real candidates $\pm 2$. The stated positive ratio selects $2$.