

Algebra 1
Arithmetic & Geometric Sequence Rules | Algebra 1 | 5-Topic Bundle

5-topic bundle | 480 problems | Four activity formats

- 01 Sequences as Discrete Functions**
View individual product and its full preview
- 02 Arithmetic Sequence Explicit and Recursive Rules**
View individual product and its full preview
- 03 Identifying Geometric Sequences**
View individual product and its full preview
- 04 Explicit Geometric Sequence Rules**
View individual product and its full preview
- 05 Recursive Geometric Sequence Rules**
View individual product and its full preview
-

In every topic

Answer Bank Challenge	24 tasks
Grid Rounds	24 tasks
Match & Move	24 cards
Error Analysis & Strategy	24 tasks
Quick Answer Key and Full Worked Solutions	included
Teacher / Parent Use Guide and Terms of Use	included

Product previews

The following preview pages show the cover, all four activity formats, and worked examples for each included resource, in the listed order.

40 PDFs and 5 READMEs; 281 buyer PDF pages across the 5 products.

Preview pages are not included in the buyer page count. Check the list against resources you already own.

Algebra 1
Sequences as Discrete Functions

Discrete vs. Continuous Functions and Domain | A1-U04-P10

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
04	Error Analysis & Strategy	24 tasks
05	Quick Answer Key	96 answers
06	Full Worked Solutions	96 solutions
07	Teacher / Parent Use Guide	included
08	Terms of Use & License	included

Topic focus
Across 96 tasks this topic asks for verified sequence interpretation, value, domain, graph, or judgment.
8 PDFs and a README; 61 buyer pages.

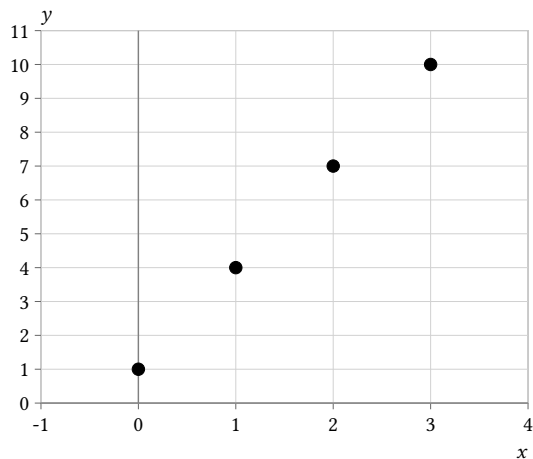
Algebra 1

Sequences as
Discrete Functions

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.

A graph shows filled points $(0, 1)$, $(1, 4)$, $(2, 7)$, $(3, 10)$ and explicitly says the sequence ends at $n = 3$. Should an arrow extend the pattern?



Bank label: _____

A listed sequence starts at index 3: $x_3=20$, $x_4=17$, $x_5=14$. Which notation names the first listed value?

Index	Value
3	20
4	17
5	14

Bank label: _____

Given $d_1=20$ and $d_n=d_{n-1}-n$ for $n \geq 2$, generate d_2 , d_3 , d_4 .

Bank label: _____

A sequence starts 1, 2, 5 and is explicitly known to have constant second difference 2. Is the next term determined?

Bank label: _____

Algebra 1

Sequences as
Discrete Functions

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.

Given $a_n = n^2 - 3n + 5$ for positive integers, compute a_1, a_4, and a_7. _____ _____	A sequence begins at $n = 4$ and follows $t_n = 5 + 3(n - 4)$. Find t_4 and t_9. _____ _____
For $n = 1, 2, 3, \dots$, the sequence is $a_n = 3n + 2$. Find a_4. _____ _____	A sequence is defined only at perfect-square indices no greater than 25, beginning with 1. List the domain. _____ _____
For $n = 0, 1, 2, \dots$, define q_n as n plus -1 raised to the nth power. Find q_2 and q_3. _____ _____	A sequence is defined only for n in $\{1, 4, 9, 16\}$ by $d_n = \sqrt{n} + n$. Evaluate d_9 and decide whether d_{10} exists. _____ _____

Algebra 1

Sequences as
Discrete Functions

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.

Incoming: Sample 4 has measured temperature 18.5 degrees. The pairs for a sequence are $(1, 5)$, $(2, 8)$, $(3, 5)$. What does q_3 equal? <table border="1" data-bbox="151 594 797 716"> <thead> <tr> <th>Index</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>5</td> </tr> <tr> <td>2</td> <td>8</td> </tr> <tr> <td>3</td> <td>5</td> </tr> </tbody> </table> Your response: _____	Index	Value	1	5	2	8	3	5	Incoming: The lookup gives $q_3 = 5$. Let $e_0=2$ and $e_n=e_{n-1}+2n$ for $n \geq 1$. Determine e_1 through e_3. Your response: _____
Index	Value								
1	5								
2	8								
3	5								
Incoming: The table entry is $c_0 = 7$. The sequence T_k gives the temperature of sample k, and samples are numbered starting at 1. Interpret $T_4=18.5$. Your response: _____	Incoming: No. $A_3 = 9$, whereas $B_3 = 15$. The rule $d_n=5 - 4n$ applies for $n = 1, 2, 3, \dots$. Find d_3. Your response: _____								
Incoming: The rule gives $p_6 = 15$. The rule e_n is supplied for integers $2 \leq n \leq 6$. List its domain. Your response: _____	Incoming: The fifth term is $b_5 = 10$. The rule $j_n=(n-2)^2 + 1$ is defined for $n = 0, 1, \dots, 6$. Fill the entries for $n = 2$ and $n = 5$. Your response: _____								

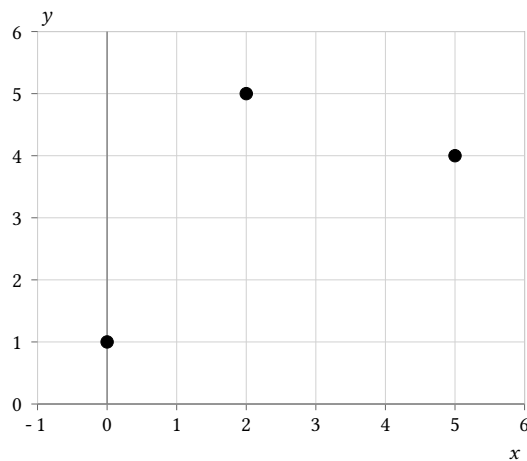
Algebra 1

Sequences as Discrete Functions

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.

A sequence graph has exactly $(0, 1), (2, 5), (5, 4)$. A student adds points $(1, 3), (3, \frac{14}{3}), (4, \frac{13}{3})$ by connecting segments. Diagnose all added points.

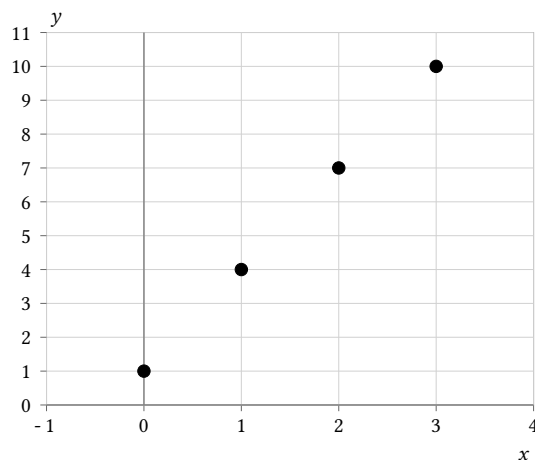


Sequences as Discrete Functions

Full Worked Solutions - excerpt

Worked example

Problem. A graph shows filled points $(0, 1), (1, 4), (2, 7), (3, 10)$ and explicitly says the sequence ends at $n = 3$. Should an arrow extend the pattern?



Answer. No. The graph is exactly those four points and has no continuation arrow.

Explanation and check.

A visible pattern does not override the stated finite domain $\{0, 1, 2, 3\}$.

Worked example

Problem. Given $d_1 = 20$ and $d_n = d_{n-1} - n$ for $n \geq 2$, generate d_2, d_3, d_4 .

Answer. The values are $d_2 = 18, d_3 = 15$, and $d_4 = 11$.

Explanation and check.

Subtract 2, then 3, then 4 from the current preceding value.

Algebra 1
Arithmetic Sequence Explicit and Recursive Rules

Arithmetic Sequence Explicit and Recursive Rules | A1-U04-P11

96 problems · Four activity formats

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Topic focus
Across 96 tasks this topic asks for derived rule, comparison, diagnosis, or justified conclusion.
8 PDFs and a README; 46 buyer pages.

Algebra 1

Arithmetic Sequence Explicit and Recursive Rules

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

A declared arithmetic sequence has $a_1 = 4$ and $a_2 = 7$. Its domain is the integers $n \geq 1$. Derive both an explicit rule and a recursive rule. _____ Bank label: _____	A book club log has 0 pages at index 0 and changes by 15 pages per index. Here n counts finished sessions. Write matching explicit and recursive rules for the recorded quantity b_n. _____ Bank label: _____
Translate this initialized recurrence into one explicit formula: $a_6 = -2$, $a_n = a_{n-1} + 4$ for integers $n \geq 7$. _____ Bank label: _____	The same sequence is given by $c_n = -5 + 2(n - 4)$; $c_4 = -5$, $c_n = c_{n-1} + 2$. For the task 'explain the change from one stage to the next', choose a useful form and justify the choice. _____ Bank label: _____
Translate this initialized recurrence into one explicit formula: $a_1 = 3$, $a_n = a_{n-1} + 4$ for integers $n \geq 2$. _____ Bank label: _____	A planted tree row has 23 trees at index 4 and changes by 3 trees per index. Here the first supplied row is row 4. Write matching explicit and recursive rules for the recorded quantity p_n. _____ Bank label: _____
Replace the repeated update with direct index access: $a_1 = 10$, $a_n = a_{n-1} - 2$ for integers $n \geq 2$. _____ Bank label: _____	$d_2 = 6$, $d_3 = 2$, and $d_n = 2d_{n-1} - d_{n-2}$ for $n \geq 4$. Find d_4, d_5, d_6 and decide whether the observed change is constant. _____ Bank label: _____

Algebra 1

Arithmetic Sequence Explicit and Recursive 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. A value without its unit is not a complete answer.

Express the same indexed sequence without predecessor notation: $a_7 = 5, a_n = a_{n-1} - 1$ for integers $n \geq 8$. _____ _____	A savings envelope has 25 dollars at index 0 and changes by 6 dollars per index. Here n counts completed weekly deposits. Write matching explicit and recursive rules for the recorded quantity a_n. _____ _____
Write a closed arithmetic rule equivalent to $a_1 = -7, a_n = a_{n-1} - 4$ for integers $n \geq 2$. _____ _____	A candle measurement has 30 centimeters at index 0 and changes by -1 centimeters per index. Here n counts elapsed hours. The record stops at index 30. Write matching explicit and recursive rules for the recorded quantity c_n. _____ _____
Express the same indexed sequence without predecessor notation: $a_1 = 8, a_n = a_{n-1} + 0$ for integers $n \geq 2$. _____ _____	A constant-additive sequence includes $a_1 = 12$ and $a_5 = 0$. Its domain is the integers $n \geq 1$. Derive both an explicit rule and a recursive rule. _____ _____

Algebra 1

Arithmetic Sequence Explicit and Recursive 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.

Incoming: $a_3 = 15$. Translate this initialized recurrence into one explicit formula: $a_{-2} = 9, a_n = a_{n-1} - 4$ for integers $n \geq -1$. Your response: _____	Incoming: For integers $n \geq -2, a_n = 9 - (4)(n + 2)$. Reverse the known additive updates to recover the anchor: $a_n = a_{n-1} + \frac{3}{2}$ for $n \geq 1$, and $a_9 = \frac{27}{2}$. The sequence begins at $n = 0$. Find a_0. Your response: _____
Incoming: For integers $n \geq 8, a_n = 17 - (3)(n - 8)$. Determine the missing initial value for this forward recurrence: $a_n = a_{n-1} + \frac{7}{3}$ for $n \geq 4$, and $a_{15} = 43$. The sequence begins at $n = 3$. Find a_3. Your response: _____	Incoming: For integers $n \geq 3, a_n = 11 - (6)(n - 3)$. Supply both parts of the recursive specification for $a_n = (0)n + 6$ for integers $n \geq 1$. Your response: _____
Incoming: For integers $n \geq 0, a_n = -\frac{3}{2} + (\frac{5}{2})(n)$. Work backward by the indexed number of steps: $a_n = a_{n-1} + 0$ for $n \geq 8$, and $a_{19} = 19$. The sequence begins at $n = 7$. Find a_7. Your response: _____	Incoming: $a_4 = 25, a_n = a_{n-1} + 6$ for integers $n \geq 5$. $b_0 = 1, b_1 = 4$, and $b_n = b_{n-1} + 2b_{n-2}$ for $n \geq 2$. Compute b_2, b_3, b_4. Your response: _____

Algebra 1

Arithmetic Sequence Explicit and Recursive 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.

Audit this sequence work: Terms are 5, 8, 11, ... at $n = 1, 2, 3, \dots$. A student proposes $a_n = 5 + 3n$. Identify the defect and state a correction.

Audit this sequence work: A student converts $b_n = 9 + 4n$ for $n \geq 0$ to $b_0 = 9, b_n = b_{n-1} + 9$. Identify the defect and state a correction.

Audit this sequence work: A table gives $g_2 = 11, g_5 = 2$ for an arithmetic sequence. A proposed rule is $g_n = 11 - 9(n - 2)$. Identify the defect and state a correction.

Audit this sequence work: For $a_n = 7 - 2(n - 4), n \geq 4$, a student gives the recurrence $a_1 = 7, a_n = a_{n-1} - 2$. Identify the defect and state a correction.

Arithmetic Sequence Explicit and Recursive Rules

Full Worked Solutions - excerpt

Worked example

Problem. Convert the explicit arithmetic rule to a complete recurrence: $a_n = (3)n + 2$ for integers $n \geq 1$.

Answer. $a_1 = 5, a_n = a_{n-1} + 3$ for integers $n \geq 2$.

Explanation and check.

The coefficient of n is the consecutive-term difference; evaluate the formula at the first allowed index for the anchor.

Worked example

Problem. Convert the explicit arithmetic rule to a complete recurrence: $a_n = (-5)n + 20$ for integers $n \geq 6$.

Answer. $a_6 = -10, a_n = a_{n-1} - 5$ for integers $n \geq 7$.

Explanation and check.

The coefficient of n is the consecutive-term difference; evaluate the formula at the first allowed index for the anchor.

Algebra 1
Identifying Geometric Sequences

Identifying Geometric Sequences | A1-U07-P09

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
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08	Terms of Use & License	included

Topic focus
Across 96 tasks this topic asks for compatible ratio set, set of compatible ratios, ratio in exact form, common ratio, geometric decision and ratio and three indexed terms.
8 PDFs and a README; 59 buyer pages.

Algebra 1

Identifying Geometric Sequences

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.

For $n = 1, 2, 3, 4$, a sequence has terms 2, 6, 18, 54. Is the displayed sequence geometric? If so, give the common ratio. Use the complete originally requested ratio or ordered list of terms as the matching response, keeping each requested position and the original geometric-assumption scope. Provide the original verification.

Index n	Given term
1	2
2	6
3	18
4	54

Bank label: _____

Determine whether 80, 40, 20, 10 has a constant multiplicative step. State that step as a common ratio. Use the complete originally requested ratio or ordered list of terms as the matching response, keeping each requested position and the original geometric-assumption scope. Provide the original verification.

Bank label: _____

Does the finite sequence $7, -7, 7, -7, 7$ have one common ratio? Explain the alternating signs. Use the complete originally requested ratio or ordered list of terms as the matching response, keeping each requested position and the original geometric-assumption scope. Provide the original verification.

Bank label: _____

At indices 3 through 6, the terms are $-4, 8, -16, 32$. Decide whether these consecutive terms are geometric and identify r . Use the complete originally requested ratio or ordered list of terms as the matching response, keeping each requested position and the original geometric-assumption scope. Provide the original verification.

Index n	Given term
3	-4
4	8
5	-16
6	32

Bank label: _____

Algebra 1

Identifying Geometric Sequences

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.

A table gives $a_0 = -5$, $a_1 = -15$, $a_2 = -45$, and $a_3 = -135$. Test every transition for a common ratio.

Index n	Given term
0	-5
1	-15
2	-45
3	-135

The first four terms in a table are $-81, -27, -9, -3$. Are they geometric, and why do the terms remain negative?

Index n	Given term
1	-81
2	-27
3	-9
4	-3

A table lists 3, 12, 48, 193 at consecutive indices. Test the geometric claim and identify the first transition that fails.

Index n	Given term
1	3
2	12
3	48
4	193

A table starts at $n = 4$ with $a_4 = 9$, $a_5 = 27$, $a_6 = 81$, and $a_7 = 243$. Does the nonunit starting index affect the common-ratio test?

Index n	Given term
4	9
5	27
6	81
7	243

Observed terms at $n = 1$ through 4 are 4, 12, 36, 108. State the common ratio supported by these data, then explain what the finite table does not prove about later terms.

At four consecutive indices the terms are 2, -4 , 8, -15.5 . Test the proposed geometric pattern, locate the failure, and state the term that would preserve the earlier ratio.

Index n	Given term
5	2
6	-4
7	8
8	-15.5

Algebra 1

Identifying Geometric Sequences

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.

START The entries $\frac{5}{2}$, $\frac{5}{4}$, $\frac{5}{8}$, and $\frac{5}{16}$ are consecutive terms. Verify or reject the claim that they form a geometric sequence. Use the complete originally requested ratio or ordered list of terms as the matching response, keeping each requested position and the original geometric-assumption scope. Provide the original verification. Your response: _____	Incoming: The common ratio is $-\frac{2}{3}$. Assume 4, 12 begin a geometric sequence. Find the next term. Use the complete originally requested ratio or ordered list of terms as the matching response, keeping each requested position and the original geometric-assumption scope. Provide the original verification. Your response: _____						
Incoming: Yes; $r = 2$. A table row reads 243, 81, 27, 9 at consecutive indices. Determine its common ratio. Use the complete originally requested ratio or ordered list of terms as the matching response, keeping each requested position and the original geometric-assumption scope. Provide the original verification. Your response: _____	Incoming: 48, -6 A geometric sequence has $a_2 = 1.2$ and $a_3 = 6$. Determine a_4 from the ratio in the table. Use the complete originally requested ratio or ordered list of terms as the matching response, keeping each requested position and the original geometric-assumption scope. Provide the original verification. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th style="width: 50%;">Index n</th> <th style="width: 50%;">Given term</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>1.2</td> </tr> <tr> <td>3</td> <td>6</td> </tr> </tbody> </table> Your response: _____	Index n	Given term	2	1.2	3	6
Index n	Given term						
2	1.2						
3	6						
Incoming: The sequence is geometric with $r = -\frac{1}{2}$. A geometric sequence has $a_1 = 3$ and $a_2 = 6$. Find a_3 and a_4. Use the complete originally requested ratio or ordered list of terms as the matching response, keeping each requested position and the original geometric-assumption scope. Provide the original verification. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th style="width: 50%;">Index n</th> <th style="width: 50%;">Given term</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3</td> </tr> <tr> <td>2</td> <td>6</td> </tr> </tbody> </table> Your response: _____	Index n	Given term	1	3	2	6	Incoming: $r = \frac{1}{5}$ Use exact fraction arithmetic to test $\frac{3}{2}$, -1, $\frac{2}{3}$, $-\frac{4}{9}$ for one common ratio. Use the complete originally requested ratio or ordered list of terms as the matching response, keeping each requested position and the original geometric-assumption scope. Provide the original verification. Your response: _____
Index n	Given term						
1	3						
2	6						

Algebra 1**Identifying Geometric Sequences****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.

The geometric sequence 5, 15, _____, 135 has one missing term. Recover it and verify both neighboring transitions. Choose a recovery method justified by the given positions: use a quotient of known adjacent nonzero terms, or use the multiplicative relation across an index gap. Explain which information supports your choice, apply it, and check every possible ratio or missing term against the original sign and geometric conditions.

A real geometric sequence has consecutive terms 64, x , 16. Find every possible x and the corresponding common ratio. Choose a recovery method justified by the given positions: use a quotient of known adjacent nonzero terms, or use the multiplicative relation across an index gap. Explain which information supports your choice, apply it, and check every possible ratio or missing term against the original sign and geometric conditions.

Identifying Geometric Sequences

Full Worked Solutions - excerpt

Worked example

Problem. Starting with $a_9 = 125$, apply $r = \frac{1}{5}$ to complete a_{10} and a_{11} .

Answer. $a_{10} = 25$ and $a_{11} = 5$.

Explanation and check.

Successive division by 5 produces 25 and 5.

Worked example

Problem. Given $a_3 = 1$ and $r = -4$, supply the next two entries.

Answer. $a_4 = -4$ and $a_5 = 16$.

Explanation and check.

Multiply by -4 twice: 1 becomes -4 , then 16.

Algebra 1
Explicit Geometric Sequence Rules

Explicit Geometric Sequence Rules | A1-U07-P10

96 problems · Four activity formats

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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.

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.

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. _____ 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. _____ 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. _____ 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. _____ 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. _____ Bank label: _____	<i>Abi</i>-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. _____ 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. _____ 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. _____ Bank label: _____

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.

Incoming: $a_n = -81\left(-\frac{1}{3}\right)^{n-6}, n \geq 1$. 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: $a_n = 48\left(-\frac{1}{2}\right)^{n-4}, n \geq 1$. 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: $a_n = 160\left(\frac{3}{4}\right)^{n-3}, n \geq 0$. 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, 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 $n = 0, 1, 2, \dots$ 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.

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

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.

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: $-2(-1)^n = 2(-1)^{n-1}$.

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 ± 2 . The stated positive ratio selects 2 .

Algebra 1
Recursive Geometric Sequence Rules

Recursive Geometric Sequence Rules | A1-U07-P11

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
04	Error Analysis & Strategy	24 tasks
05	Quick Answer Key	96 answers
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07	Teacher / Parent Use Guide	included
08	Terms of Use & License	included

Topic focus

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

8 PDFs and a README; 61 buyer pages.

Algebra 1

Recursive 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.

A discrete state is -2 at time 0 and is quadrupled at every tick. Give its initial condition and one-step recurrence. Use the full requested recursive definition (initial indexed value, update and valid range), or the complete ordered list of requested term values, as the matching response. Retain the original verification.

Bank label: _____

State a recurrence for a sequence whose first declared term is $a_5 = 9$ and whose common ratio is 2. Use the full requested recursive definition (initial indexed value, update and valid range), or the complete ordered list of requested term values, as the matching response. Retain the original verification.

Given indexed term	Value
a_5	9

Bank label: _____

Convert the table values $\frac{1}{3}, \frac{2}{3}, \frac{4}{3}$ at consecutive positive indices into a recursive definition. Use the full requested recursive definition (initial indexed value, update and valid range), or the complete ordered list of requested term values, as the matching response. Retain the original verification.

Given index	Given value
1	$\frac{1}{3}$
2	$\frac{2}{3}$
3	$\frac{4}{3}$

Bank label: _____

Write a complete recurrence for the positive-index terms 64, -16 , 4, preserving the exact signed factor. Use the full requested recursive definition (initial indexed value, update and valid range), or the complete ordered list of requested term values, as the matching response. Retain the original verification.

Given index	Given value
1	64
2	-16
3	4

Bank label: _____

Algebra 1

Recursive 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 c be real. Define recursively the positive-index geometric sequence with first value c and multiplier 4.

Given indexed term	Value
a_1	c

For real parameter q , write the zero-indexed recurrence having $a_0 = 7$ and common multiplier q .

Given indexed term	Value
a_0	7

Only $a_1 = 2$ and $a_3 = 18$ are known. Write every real geometric recurrence compatible with those observations, including each initial condition and update range.

Given indexed term	Value
a_1	2
a_3	18

The table shows 0 at indices 1, 2, and 3. Give two different complete geometric recurrences that extend this table and explain why the displayed values do not identify one multiplier.

Given index	Given value
1	0
2	0
3	0

A nonzero sequence value at index 5 is x . Moving one index left multiplies a value by 3. Write the forward recurrence and choose a valid initial condition at index 5 for the domain $n \geq 5$.

Given indexed term	Value
a_5	x

Starting at $a_{-2} = 3$ and multiplying the immediately prior term by -2 , fill a_{-1} , a_0 , a_1 , and a_2 .

Given indexed term	Value
a_{-2}	3

Algebra 1

Recursive 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.

Incoming: $a_2 = 7$ and $a_3 = 7$.

For $a_0 = 8$ and $a_n = 0a_{n-1}$, find a_1 and a_2 . Use the full requested recursive definition (initial indexed value, update and valid range), or the complete ordered list of requested term values, as the matching response. Retain the original verification.

Given indexed term	Value
a_0	8

Your response: _____

Incoming: $a_2 = 27$, $a_3 = 9$, and $a_4 = 3$.

A recurrence is anchored by $a_4 = \frac{1}{5}$ and multiplies by 5. Find a_5 through a_7 . Use the full requested recursive definition (initial indexed value, update and valid range), or the complete ordered list of requested term values, as the matching response. Retain the original verification.

Given indexed term	Value
a_4	$\frac{1}{5}$

Your response: _____

Incoming: $a_2 = 6$ and $a_3 = -12$.

Given $a_3 = 4$ and $a_n = 5a_{n-1}$, evaluate a_4 and a_5 . Use the full requested recursive definition (initial indexed value, update and valid range), or the complete ordered list of requested term values, as the matching response. Retain the original verification.

Given indexed term	Value
a_3	4

Your response: _____

Incoming: $a_1 = -10$, $a_2 = -20$, and $a_3 = -40$.

A table has 64 at index 4 and uses the multiplier $-\frac{1}{2}$. Determine the entries at indices 5, 6, and 7. Use the full requested recursive definition (initial indexed value, update and valid range), or the complete ordered list of requested term values, as the matching response. Retain the original verification.

Given indexed term	Value
a_4	64

Your response: _____

Incoming: $a_3 = 10$, $a_4 = 20$, $a_5 = 40$, and $a_6 = 80$.

A geometric update starts from $a_5 = -2$ and multiplies by 4. Determine a_6 , a_7 , and a_8 . Use the full requested recursive definition (initial indexed value, update and valid range), or the complete ordered list of requested term values, as the matching response. Retain the original verification.

Given indexed term	Value
a_5	-2

Your response: _____

Incoming: $a_3 = 2$, $a_4 = -\frac{2}{3}$, and $a_5 = \frac{2}{9}$.

Use the index-7 initial condition 10 and multiplier 3 to determine the next two indexed terms. Use the full requested recursive definition (initial indexed value, update and valid range), or the complete ordered list of requested term values, as the matching response. Retain the original verification.

Given indexed term	Value
a_7	10

Your response: _____

Algebra 1

Recursive 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.

The first three terms are 2, 6, 18 at indices 1, 2, 3. Write a recursive definition that includes its starting value and valid update range. Choose how to establish the update multiplier from these givens: infer it from an available adjacent nonzero pair, or translate/use the supplied per-step multiplier or description. Explain which evidence supports your route, then give the complete recursive specification in the originally requested index form and range.

Given index	Given value
1	2
2	6
3	18

A table starts at $n = 0$ with values 5, 10, 20. State its geometric recurrence using the zero-index convention. Choose how to establish the update multiplier from these givens: infer it from an available adjacent nonzero pair, or translate/use the supplied per-step multiplier or description. Explain which evidence supports your route, then give the complete recursive specification in the originally requested index form and range.

Given index	Given value
0	5
1	10
2	20

Recursive Geometric Sequence Rules

Full Worked Solutions - excerpt

Worked example

Problem. The recurrence $a_1 = 4, a_n = a_{n-1} + 3$ is attached to the geometric table 4, 12, 36. Repair the update operation.

Answer. $a_1 = 4$; $a_n = 3a_{n-1}$ for $n \geq 2$.

Explanation and check.

The values triple rather than increase by 3, so the recurrence must multiply the preceding term by 3.

Worked example

Problem. Audit $a_0 = 7, a_n = 2a_{n-1}$ for $n \geq 0$. Repair the range so the initial condition is not also forced to reference an undefined a_{-1} .

Answer. $a_0 = 7$; $a_n = 2a_{n-1}$ for $n \geq 1$.

Explanation and check.

Index 0 is supplied directly, so the first recurrence output is index 1.