

Algebra 1
Exponential Growth Models

Exponential Growth Models | A1-U07-P15
96 problems · Four activity formats

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Topic focus
This topic is a focused set of 96 practice tasks on Exponential Growth Models.
8 PDFs and a README; 62 buyer pages.

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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.

Find the multiplier for each statement and explain why the phrases are not equivalent. Given statements: <i>A</i>: next value is 18% of current <i>B</i>: next value is 18% more than current _____ _____	A trial's output increases by 140% after each launch. Determine the factor and interpret it as a percent of the preceding output. Given rate: 140% increase per launch _____ _____
Give the quarterly factor for 2.5% growth as both a decimal and a fraction. Given rate: 2.5% per quarter _____ _____	A quantity grows by 200% each interval. Is its factor 2 or 3? Justify. Given rate: 200% increase per interval _____ _____
Find the multiplier, and state the implied percent increase. Given statement: the next count is 120% of the current count _____ _____	Find the final amount after the two successive growth intervals. Initial: 100 Rates: 10%, 20% _____ _____

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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 A quantity increases by 5% each interval. What multiplier represents one interval of growth? Use the complete requested model, rate with its interval, or amount with its units and required precision as the matching response. Retain the original time definition and explanation. Given rate: 5% per interval Your response: _____	Incoming: 1.05 Membership grows 12% per month. Give the monthly growth factor. Use the complete requested model, rate with its interval, or amount with its units and required precision as the matching response. Retain the original time definition and explanation. Given rate: 12% per month Your response: _____
Incoming: 100 Determine the cycle-0 quantity. Use the complete requested model, rate with its interval, or amount with its units and required precision as the matching response. Retain the original time definition and explanation. Cycles: 2 Later: 675 Given rate: 50% per cycle Your response: _____	Incoming: $A(t) = 500(1.20)^{t-3}$. Under the continuous interval model, find $F(\frac{1}{2})$. Use the complete requested model, rate with its interval, or amount with its units and required precision as the matching response. Retain the original time definition and explanation. Model: $F(t) = 180(1.44)^t$ for real $t \geq 0$ Time: $\frac{1}{2}$ interval Your response: _____
Incoming: 1.0004 What multiplier implements the stated update after one round? Use the complete requested model, rate with its interval, or amount with its units and required precision as the matching response. Retain the original time definition and explanation. Given statement: add 30% of the current amount after each round Your response: _____	Incoming: 1.75 A measurement increases 0.1% each hour. What hourly multiplier should be used? Use the complete requested model, rate with its interval, or amount with its units and required precision as the matching response. Retain the original time definition and explanation. Given rate: 0.1% per hour Your response: _____

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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.

Find the modeled amount after two periods. Choose a calculation route: substitute the elapsed update count directly into the model, or track successive interval multiplications when the stated time and domain permit complete updates.

Explain why the selected route fits these givens, use it, and preserve the original time origin and rounding instruction.

Model: $A(n) = 100(1.10)^n$

Time: 2

What is the modeled quantity after three complete cycles? Choose a calculation route: substitute the elapsed update count directly into the model, or track successive interval multiplications when the stated time and domain permit complete updates. Explain why the selected route fits these givens, use it, and preserve the original time origin and rounding instruction.

Cycles: 3

Initial: 80

Given rate: 50% per cycle

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Full Worked Solutions - excerpt

Worked example

Problem. Find the multiplier for each statement and explain why the phrases are not equivalent.

Given statements: A : next value is 18% of current B : next value is 18% more than current

Answer. A uses 0.18; B uses 1.18.

Explanation and check.

Percent of names the entire next amount, while percent more names an addition to the retained original.

Worked example

Problem. A quantity grows by 200% each interval. Is its factor 2 or 3? Justify.

Given rate: 200% increase per interval

Answer. The factor is 3.

Explanation and check.

The increase is two copies of the current amount; adding the retained copy makes three copies total.