

Name _____
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Date _____
Algebra II

Converting Rates

Round all coefficients to 6 decimal places

1. Gerard took out a \$72000 loan for college that has a 12.7% interest rate. An equation to represent this situation is given as $A(t) = 72000(1.127)^t$.

Write an equation to find the monthly growth rate after t years.

Write an equation to find the monthly growth rate after m months.

What is the monthly growth rate rounded to the nearest thousandth of a percent?

Write an equation to find the weekly growth rate after t years.

Write an equation to find the weekly growth rate after w weeks.

What is the weekly growth rate to the nearest thousandth of a percent?

Write an equation to find the daily growth rate after t years.

Write an equation to find the daily growth rate after d days.

What is the daily growth rate to the nearest thousandth of a percent?

2. The population of a small neighborhood in Brooklyn, NY is 452,000 and is growing by a rate of 11.6% each year. An equation to represent this situation is given as $A(t) = 452000(1.116)^t$. Write an equation to find the monthly growth rate after t years.

Write an equation to find the monthly growth rate after m months.

What is the monthly growth rate to the nearest thousandth of a percent?

Write an equation to find the weekly growth rate after t years.

Write an equation to find the weekly growth rate after w weeks.

What is the weekly growth rate to the nearest thousandth of a percent?

Write an equation to find the daily growth rate after t years.

Write an equation to find the daily growth rate after d days.

What is the daily growth rate to the nearest thousandth of a percent?

8. A population of insects grows according to the formula $p(t) = 2100(1.37)^t$ where $p(t)$ is the population of insects after t weeks. What is the daily interest rate rounded to the nearest tenth of a percent?

9. Each year, the amount of students in Eastbury High School increases by 7.15%. Which of the following expressions could be used to find the *weekly* rate of increase of Eastbury High School after w weeks?

- 1) $(1.0715)^w$ 2) $(1.0715^{\frac{1}{52}})^{52w}$ 3) $(1.0715^{\frac{1}{52}})^w$ 4) $(1.0715)^{52w}$

10. Each year, the amount of students in Eastbury High School increases by 7.15%. Which of the following expressions could be used to find the *weekly* rate of increase of Eastbury High School after t years?

- 1) $(1.0715^{\frac{1}{52}})^t$ 2) $(1.0715^{\frac{1}{52}})^{52t}$ 3) $(1.0715)^{52t}$ 4) $(1.0715)^t$

11. Last year, the total revenue for Home Style, a national restaurant chain, increased 5.25% over the previous year. If this trend were to continue, which expression could the company's chief financial officer use to approximate their monthly percent increase in revenue? [Let m represent months.]

- 1) $(1.0525)^m$ 3) $(1.00427)^m$
 2) $(1.0525)^{\frac{12}{m}}$ 4) $(1.00427)^{\frac{m}{12}}$

12. Rasmus invested \$65,000 in the stock market and makes an average of 9.2% each year on his investments. Which equation could be used to find his monthly percent increase after t years?

- 1) $v = 65000(1.092)^t$ 3) $v = 65000(1.0074)^t$
 2) $v = 65000(1.0074)^{12t}$ 4) $v = 65000(1.092)^{12t}$

13. Over the past several years, the value of a stock has decreased by 3.2% each year. The value of the stock is now \$87.24. Which of the following equations does not represent the value of the stock after t years or m months?

- 1) $a(t) = 87.24(1.032)^t$ 3) $a(m) = 87.24(1.0026)^{12m}$
 2) $a(t) = 87.24(1.0026)^{12t}$ 4) $a(m) = 87.24(1.0026)^m$