

Additional Vocabulary Support

Exponential Growth and Decay

Problem

What is the account balance on \$800 at a 3.5% interest rate compounded quarterly after 2 years? Justify and explain your work.

Explain	Work	Justify
First, write the compound interest formula.	$A = P\left(1 + \frac{r}{n}\right)^{nt}$	Compound interest formula
Second, label the known values.	$P = 800, r = 0.035$ $n = 4, t = 2$	Given information
Third, substitute values into the formula.	$A = 800\left(1 + \frac{0.035}{4}\right)^{4 \cdot 2}$	Substitution
Then, simplify to get the answer.	$800(1.00875)^8 = 857.75$	Order of operations

Solution
\$ 857.75

Exercise

What is the account balance on \$550 at a 4.5% interest rate compounded quarterly after 2 years? Justify and explain your work.

Explain	Work	Justify
First, _____	$A = P\left(1 + \frac{r}{n}\right)^{nt}$	_____
Second, _____	$P = 550, r = 0.045$ $n = 4, t = 2$	_____
Third, _____	$A = 550\left(1 + \frac{0.045}{4}\right)^{4 \cdot 2}$	_____
Then, _____	$550(1.01125)^8 = 601.49$	_____

Solution
\$ 601.49