

F.BF.A.1 Modeling Exponential Functions 2

- 1 A radioactive substance has an initial mass of 100 grams and its mass halves every 4 years. Which expression shows the number of grams remaining after t years?
- 1) $100(4)^{\frac{t}{4}}$
 - 2) $100(4)^{-2t}$
 - 3) $100\left(\frac{1}{2}\right)^{\frac{t}{4}}$
 - 4) $100\left(\frac{1}{2}\right)^{4t}$
- 2 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) $(1.0525)^m$
 - 2) $(1.0525)^{\frac{12}{m}}$
 - 3) $(1.00427)^m$
 - 4) $(1.00427)^{\frac{m}{12}}$
- 3 A payday loan company makes loans between \$100 and \$1000 available to customers. Every 14 days, customers are charged 30% interest with compounding. In 2013, Remi took out a \$300 payday loan. Which expression can be used to calculate the amount she would owe, in dollars, after one year if she did not make payments?
- 1) $300(.30)^{\frac{14}{365}}$
 - 2) $300(1.30)^{\frac{14}{365}}$
 - 3) $300(.30)^{\frac{365}{14}}$
 - 4) $300(1.30)^{\frac{365}{14}}$
- 4 According to a pricing website, Indroid phones lose 58% of their cash value over 1.5 years. Which expression can be used to estimate the value of a \$300 Indroid phone in 1.5 years?
- 1) $300e^{-0.87}$
 - 2) $300e^{-0.63}$
 - 3) $300e^{-0.58}$
 - 4) $300e^{-0.42}$

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Answer Section

1 ANS: 3 REF: 010813b

2 ANS: 3

$$1.0525^{\frac{1}{12}} \approx 1.00427$$

REF: 061621aii

3 ANS: 4 REF: 081622aii

4 ANS: 1

$$\frac{A}{P} = e^{rt}$$

$$0.42 = e^{rt}$$

$$\ln 0.42 = \ln e^{rt}$$

$$-0.87 \approx rt$$

REF: 011723aii