

A.A.9: Exponential Functions 2: Analyze and solve verbal problems that involve exponential growth and decay

- 1 The population of Henderson City was 3,381,000 in 1994, and is growing at an annual rate of 1.8%. If this growth rate continues, what will the approximate population of Henderson City be in the year 2000?
 - 1) 3,696,000
 - 2) 3,763,000
 - 3) 3,798,000
 - 4) 3,831,000
- 2 Kathy deposits \$25 into an investment account with an annual rate of 5%, compounded annually. The amount in her account can be determined by the formula $A = P(1 + R)^t$, where P is the amount deposited, R is the annual interest rate, and t is the number of years the money is invested. If she makes no other deposits or withdrawals, how much money will be in her account at the end of 15 years?
 - 1) \$25.75
 - 2) \$43.75
 - 3) \$51.97
 - 4) \$393.97
- 3 On January 1, 1999, the price of gasoline was \$1.39 per gallon. If the price of gasoline increased by 0.5% per month, what was the cost of one gallon of gasoline, to the *nearest cent*, on January 1 one year later?
- 4 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) $100\left(\frac{1}{2}\right)^{4t}$
- 5 A used car was purchased in July 1999 for \$11,900. If the car depreciates 13% of its value each year, what is the value of the car, to the *nearest hundred dollars*, in July 2002?

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1 ANS: 2

$$3,381,000(1.018)^6 \approx 3,763,000$$

REF: fall9916b

2 ANS: 3

$$A = P(1 + R)^t = 25(1 + .05)^{15} \approx 51.97$$

REF: 060803b

3 ANS:

$$1.48. \quad 1.39(1.005)^{12} \approx 1.48$$

REF: 010525b

4 ANS: 3

REF: 010813b

5 ANS:

$$\$7,800. \quad 11900(1 - 0.13)^3 \approx 7800$$

REF: 080221b