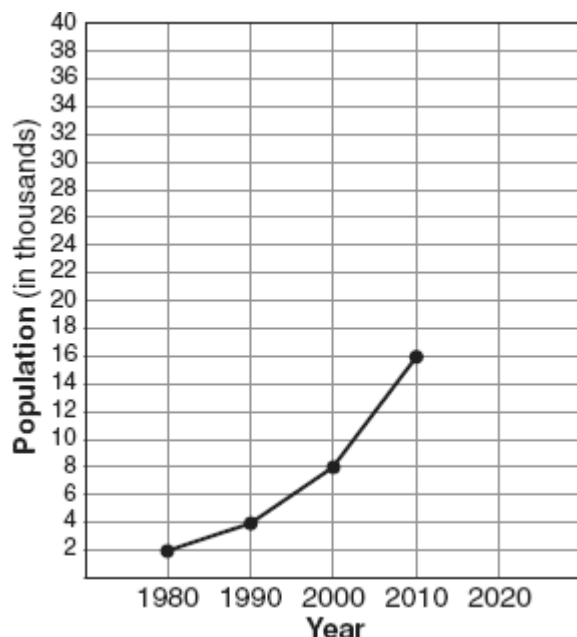


Section 9-11: Graphs Involving Exponential Functions

1. 080705a, P.I. A2.S.7

The population growth of Boomtown is shown in the accompanying graph.



If the same pattern of population growth continues, what will the population of Boomtown be in the year 2020?

- [A] 32,000 [B] 20,000
[C] 64,000 [D] 40,000

2. 060411b

Which equation models the data in the accompanying table?

Time in hours, x	0	1	2	3	4	5	6
Population, y	5	10	20	40	80	160	320

- [A] $y = 2^x$ [B] $y = 2x + 5$
[C] $y = 5(2^x)$ [D] $y = 2x$

3. 010525b, P.I. A.A.9

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. 080224b, P.I. A.A.9

The Franklins inherited \$3,500, which they want to invest for their child's future college expenses. If they invest it at 8.25% with interest compounded monthly, determine the value of the account, in dollars, after 5 years.

Use the formula $A = P\left(1 + \frac{r}{n}\right)^{nt}$, where A = value of the investment after t years, P = principal invested, r = annual interest rate, and n = number of times compounded per year.

5. 060721b, P.I. A.A.9

A population of wolves in a county is represented by the equation $P(t) = 80(0.98)^t$, where t is the number of years since 1998. Predict the number of wolves in the population in the year 2008.

6. 010813b, P.I. A.A.9

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?

[A] $100\left(\frac{1}{2}\right)^{\frac{t}{4}}$

[B] $100(4)^{\frac{t}{4}}$

[C] $100\left(\frac{1}{2}\right)^{4t}$

[D] $100(4)^{-2t}$

7. 060607b, P.I. A.A.9

The height, $f(x)$, of a bouncing ball after x bounces is represented by $f(x) = 80(0.5)^x$. How many times higher is the first bounce than the fourth bounce?

[A] 4 [B] 8 [C] 2 [D] 16

8. 080221b, P.I. A.A.9

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?

9. fall0719ia, P.I. A.A.9

Daniel's Print Shop purchased a new printer for \$35,000. Each year it depreciates (loses value) at a rate of 5%. What will its approximate value be at the end of the fourth year?

[A] \$28,507.72

[B] \$33,250.00

[C] \$27,082.33

[D] \$30,008.13

[1] A _____

[2] C _____

[2] \$1.48, and appropriate work is shown, such as providing a correctly labeled table or solving the equation $(1.39)(1.005)^{12} = C$.

[1] Appropriate work is shown, but one computational or rounding error is made.
or [1] Appropriate work is shown, but one conceptual error is made, such as using 1.05 or 1.5 or using an incorrect exponent.
or [1] A correct equation is written, but no further correct work is shown.

or [1] An incorrect equation of equal difficulty is solved appropriately.

or [1] \$1.48, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[3] incorrect procedure.

[2] 5,279.61, and appropriate work is shown, such as $3,500(1 + \frac{0.0825}{12})^{(12 \times 5)}$.

[1] Appropriate work is shown, but one computational or substitution error is made.

or [1] 5,279.61, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[4] incorrect procedure.

[2] 65, and appropriate work is shown, such as $P(10) = 80(0.98)^{10}$.

[1] Appropriate work is shown, but one computational or rounding error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] 65, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[5] incorrect procedure.

[6] A _____

[7] B _____

[2] 7,800, and appropriate work is shown.

[1] Appropriate work is shown, but one computational or rounding error is made.
or [1] 7,800, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[8] incorrect procedure.

[9] A _____