

**Practice 8-8****Exponential Growth and Decay**

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**Write an exponential function to model each situation. Find each amount after the specified time.**

- Suppose one of your ancestors invested \$500 in 1800 in an account paying 4% interest compounded annually. Find the account balance in each of the following years.
 

a. 1850	b. 1900	c. 2000	d. 2100
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- Suppose you invest \$1500 in an account paying 4.75% annual interest. Find the account balance after 25 yr with the interest compounded the following ways.
 

a. annually	b. semiannually	c. quarterly	d. monthly
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- The starting salary for a new employee is \$25,000. The salary for this employee increases by 8% per year. What is the salary after each of the following?
 

a. 1 yr	b. 3 yr	c. 5 yr	d. 15 yr
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- Carbon-14 has a half-life of 5,700 years. Scientists use this fact to determine the age of things made of organic material. Suppose the average page of a book containing approximately 0.5 mg of carbon-14 is put into a time capsule. How much carbon-14 will each page contain after each of the following numbers of years?
 

a. 5700	b. 11,400	c. 22,800	d. 34,200
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- The tax revenue that a small city receives increases by 3.5% per year. In 1990, the city received \$250,000 in tax revenue. Determine the tax revenue in each of the following years.
 

a. 1995	b. 1998	c. 2000	d. 2006
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- Suppose the acreage of forest is decreasing by 2% per year because of development. If there are currently 4,500,000 acres of forest, determine the amount of forest land after each of the following.
 

a. 3 yr	b. 5 yr	c. 10 yr	d. 20 yr
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- A \$10,500 investment has a 15% loss each year. Determine the value of the investment after each of the following.
 

a. 1 yr	b. 2 yr	c. 4 yr	d. 10 yr
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- A city of 2,950,000 people has a 2.5% annual decrease in population. Determine the city's population after each of the following.
 

a. 1 yr	b. 5 yr	c. 15 yr	d. 25 yr
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- A \$25,000 purchase decreases 12% in value per year. Determine the value of the purchase after each of the following.
 

a. 1 yr	b. 3 yr	c. 5 yr	d. 7 yr
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