



GUIDED PRACTICE

1. **Vocabulary** The function $y = 0.68(2)^x$ is an example of _____.
(*exponential growth or exponential decay*)

SEE EXAMPLE 1

- Write an exponential growth function to model each situation. Then find the value of the function after the given amount of time.
- The cost of tuition at a college is \$12,000 and is increasing at a rate of 6% per year; 4 years.
 - The number of student-athletes at a local high school is 300 and is increasing at a rate of 8% per year; 5 years.

SEE EXAMPLE 2

- Write a compound interest function to model each situation. Then find the balance after the given number of years.
- \$1500 invested at a rate of 3.5% compounded annually; 4 years
 - \$4200 invested at a rate of 2.8% compounded quarterly; 6 years

SEE EXAMPLE 3

- Write an exponential decay function to model each situation. Then find the value of the function after the given amount of time.
- The value of a car is \$18,000 and is depreciating at a rate of 12% per year; 10 years.
 - The amount (to the nearest hundredth) of a 10-mg dose of a certain antibiotic decreases in your bloodstream at a rate of 16% per hour; 4 hours.

SEE EXAMPLE 4

- Bismuth-214 has a half-life of approximately 20 minutes. Find the amount of bismuth-214 left from a 30-gram sample after 1 hour.
- Mendelevium-258 has a half-life of approximately 52 days. Find the amount of mendelevium-258 left from a 44-gram sample after 156 days.

PRACTICE AND PROBLEM SOLVING

Independent Practice

For Exercises	See Example
10–13	1
14–17	2
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Write an exponential growth function to model each situation. Then find the value of the function after the given amount of time.

- Annual sales for a company are \$149,000 and are increasing at a rate of 6% per year; 7 years.
- The population of a small town is 1600 and is increasing at a rate of 3% per year; 10 years.
- A new savings account starts at \$700 and increases at 1.2% yearly; 8 years.
- Membership of a local club grows at a rate of 7.8% yearly and currently has 30 members; 6 years.

Write a compound interest function to model each situation. Then find the balance after the given number of years.

- \$28,000 invested at a rate of 4% compounded annually; 5 years
- \$7000 invested at a rate of 3% compounded quarterly; 10 years
- \$3500 invested at a rate of 1.8% compounded monthly; 4 years
- \$12,000 invested at a rate of 2.6% compounded annually; 15 years

