

NAME: \_\_\_\_\_

*P.I. A.A.9: Analyze and solve verbal problems that involve exponential growth*

1. The amount of money  $A$  accrued at the end of  $n$  years when a certain amount  $P$  is invested at a compound annual rate  $r$  is given by  $A = P(1+r)^n$ . If a person invests \$150 at 5% interest compounded annually, find the approximate amount obtained at the end of 5 years.

[A] \$191                      [B] \$4500  
[C] \$1139                    [D] \$900

2. Find the amount accumulated to the nearest cent on \$700 compounded annually for 3 years at 9%.

3. Sandra deposited \$700 in an account paying 6.4% interest compounded annually. Find her account balance after 4 years.

4. Suppose that in 1880, one of your ancestors invested \$46 compounded annually at 6.5%. If this money were left to you, how much would you have had at the end of 1997? Round to the nearest dollar.

5. The projected worth (in millions of dollars) of a large company is modeled by the equation  $y = 246(1.11)^x$ . The variable  $x$  represents the number of years since 1997. What is the projected annual percent of growth, and what should the company be worth in 2005?

[A] 21%; \$273.06 million  
[B] 21%; \$629.28 million  
[C] 11%; \$566.92 million  
[D] 11%; \$510.74 million

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6. Use any problem solving strategy to solve the following problem. The value of a house is expected to increase from its current value of \$50,000 by 3% each year. What will the value of the house be after 3 years? If you have \$55,000 in 3 years, will you have enough to buy the house?
7. Which of the following accounts will yield the greatest amount of interest on an initial deposit of \$500.00?
- [A] Account that pays 6% interest compounded annually for 3 years
  - [B] Account that pays 4% interest compounded annually for 4 years
  - [C] Account that pays 3% interest compounded annually for 5 years
  - [D] Account that pays 5% interest compounded annually for 6 years
8. You borrow \$200 from a relative for six months. You agree to pay compound interest at the rate of 1% per month. How much interest will you pay your relative when you return the money at the end of the six months?
- [A] \$11.66                      [B] \$201.00  
[C] \$210.00                    [D] \$12.30
9. A position at a local company has a starting salary of \$15,000. The salary is expected to increase by 5% each year. What will the salary be after 5 years?
10. Write an exponential function to model the situation. Tell what each variable represents. A price of \$155 increases 3% each year.

[1] A

[2] \$906.52

[3] \$897.15

[4] \$72,889

[5] C

[6] \$54,636.35; yes

[7] D

[8] D

[9] \$19,144.22

[10]  $p = 155(1.03)^x$ ;  $p$  is the total price, and  $x$  is the number of years