

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Algebra 2 CP Worksheet 8.1-8.2 Part 3

1. The amount  $g$  (in trillions of cubic feet) of natural gas consumed in the United States from 1940 to 1970 can be modeled by  $g = 2.91(1.07)^t$ , where  $t$  is the number of years since 1940.
  - a) Identify the initial amount, the growth factor, and the annual percent increase.
  - b) Estimate the natural gas consumption in 1955.
  
2. You buy a stereo system for \$780. Each year  $t$ , the value  $V$  of the stereo system decreases by 5%.
  - a) Write an exponential decay model that describes this situation.
  - b) Estimate the cost (to the nearest dollar) of the stereo's value after 3 years.
  
3. In 1980 wind turbines in Europe generated about 5 gigawatt-hours of energy. Over the next 15 years, the amount of energy increased by about 59% per year.
  - a) Write a model giving the amount  $E$  (in gigawatt-hours) of energy  $t$  years after 1980.
  - b) About how much wind energy was generated in 1984?
  
4. The number  $A$  (in millions) of record albums sold each year in the United States from 1982 to 1993 can be modeled by  $A = 265(0.39)^t$ , where  $t$  represents the number of years since 1982.
  - a) Identify the initial amount, the decay factor, and the annual percent decrease.
  - b) Find the number of records sold in 1987.

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5. You purchase a commemorative coin for \$110. Each year  $t$ , the value  $V$  of the coin increases by 4%.
- Write an exponential growth model that describes this situation.
  - Find the value of the coin (to the nearest cent) after 7 years.
6. Hallie purchases a brand new vehicle for \$32,425. The car depreciates at a rate of 7.25% per year.
- Write an exponential model that describes this situation.
  - Find the value of the car (to the nearest dollar) after 5 years.
7. A small town's population can be described by the equation  $P = 3150(0.96)^t$ , where  $t$  is the number of years since 1992.
- Identify the initial amount, the decay factor, and the annual percent decrease.
  - How many people are living in this town in 2004?
8. A certain type of bacteria triples every hour. A scientist has a culture that starts with 36 bacteria.
- Write a model that describes this situation.
  - How many bacteria are there after 4 hours?
  - How many bacteria are there after half a day?