1. In 1971, there were 294,105 females participating in high school sports. Since then, that number has increased an average of 8.5% per year.
   a. Write an equation to represent the number of females participating in high school sports since 1971.
   b. According to the equation, approximate how many females participated in high school sports in the year 2001?

2. The median household income in 1979 was 37,060. The median household income in the United States increased an average of 0.5% each year between 1979 and 1999.
   a. Assuming the pattern continues, write an equation for the median household income for t years after 1979.
   b. Predict the median household income in 2009.

3. Computer use around the world has risen 19% annually since 1980. If 18.9 million computers were in use in 1980, write an equation for the number of computers in use for t years after 1980.
   a. Predict the number of computer in use in 2015.

4. The population of Mexico has been increasing at an annual rate of 1.7%. If the population of Mexico was 100,350,000 in the year 2000.
   a. Write an equation to represent the population growth t years since 2000.
   b. Predict the population in 2012.

5. In 1994, families in the United States spent an average of $1698 yearly on eating out.This amount grew at an annual rate of about 4.6% between 1994 and 1998.
   a. Write an equation to represent the average spending of a family that eat out, t years since 1994
   b. Estimate the average spending of a family in 2010

6. The population of Centerville is increasing at an average annual rate of 3.5%. If the current population is 12,500, predict the population in 5 years.

7. In 1950, the use of coal by residential and commercial users was 114.6 million tons. Many businesses now use cleaner sources of energy. As a result, the use of coal has decreased by about 6.6% per year.
   a. Write an equation to represent the use of coal since 1980.
   b. Estimate the amount of coal that will be used in 2015.

8. A farmer buys a tractor for $50,000. If the tractor depreciates 10% per year, find the value of the tractor in 7 years.

9. In 1995, the population of West Virginia reached 1,821,000, its highest in the 20th century. For the next five years, its population decreased 0.2% each year. If this trend continues, predict the population of West Virginia in 2010.

10. A new car costs $23,000. It is expected to depreciate 12% each year. Find the value of the car in 5 years.

11. A piece of office equipment valued at $25000 depreciates at a steady rate of 10% per year. What is the value of the equipment in 8 years?

12. Angela bought a car for $18,500. If the rate of depreciation is 11%, find the value of the car in 4 years.

Name:_____

Exponential Growth and Decay

1. The use of free weights for fitness has increased in popularity. In 1997, there were 43.2 million people who used free weights. Assuming the use of free weights increases 6% annually, write an equation for the number of people using free weights "t" years from 1997. Then predict the number of people using free weights in 2007.

2. There has been a drastic increase in the number of visitors in the Grand Canyon National Park. In the year 1920, there was an average of 71,601 visitors annually. The average visitation has increased 5.63% annually since 1920. Predict the number of visitors to the park in 2020.

3. Mr. and Mrs. Boyce bought a house for $96,000 in 1995. The real estate broker indicated that houses in their area are appreciating at an average annual rate of 4%. If the appreciation remains steady at this rate, what will the value of the Boyce's house be in 2005?

4. Zeller industries bought a piece of weaving equipment for $60,000. It is expected to depreciate at an average rate of 10% per year. Find the value of the piece of equipment after 6 years.

5. Kyle saved $500 from a summer job. He plans to spend 10% of his savings each week on various forms of entertainment. At this rate, how much will Kyle have left after 15 weeks?

6. Tiffany's bought a car for $9000 five years ago. She wants to sell it to her brother based on a 15% annual rate of depreciation. At this rate, how much will Tiffany's brother pay for the car?

7. The population of NYC increased from 7,322,564 in 1990 to 8,008,278 in 2000. The annual rate of population increase for the period was about 0.9%. Predict the population of New York City in 2010.

8. The original value of a painting is $1400. The value increases by 9% each year. Write an exponential growth function to model this situation. Find the value of the painting in 25 years.

9. The fish population in a local stream is decreasing at a rate of 3% per year. The original population was 48,000. Find the approximate population after 7 years.

10. The value of a car is $18,000 and is depreciating at a rate of 12% per year. Find the value of this car in 10 years.

11. Annual sales for a company are $149,000 and are increasing at a rate of 6% per year. Find the approximate annual sales in 7 years.

12. The yearly cost of college tuition at a local college is $12,000 and is increasing at a rate of 6% per year. Find the cost of tuition in 4 years.

13. The number of student athletes at a local high school is 300 and is increasing at a rate of 8% per year. Find the number of student athletes in 5 years.

14. An antique car is worth $32,000 and its value grows by 7% per year. Find its value in 7 years.

15. The student enrollment in a local high school is 970 students and increases by 1.2% per year. What is the approximate enrollment in 5 years.

16. In 2000, the population of a town was 1000 and was growing at a rate of 5% per year. What will the population be in 2013?

17. An investment of $8200 loses value at a rate of 2% per year. Find its value after 7 years.

18. The Greens bought a condominium for $110,000 in 2010. If its value appreciates at an average rate of 6% per year, what will the value be in 2015?

19. The population of Osaka, Japan is declining at an average rate of 0.05% yearly. The population of Osaka was 11,013,000 in 2000. If the population continues to decline, predict the population in 2050.

20. The population of Johnson City in 2005 was 25,000. Since then, the population has grown at an average rate of 3.2% each year. According to this, what will the population be in 2015?