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Exponential Growth and Decay Applications

1. Johnny purchased a lime green Camaro in 1972 for $4600. The car has lost value at a rate of approximately 9.8% each year. What is the value of his car today?
2. The Giant Panda population is shrinking. In 1976, there were an estimated 6200 Pandas remaining in the world.
3. If the population has decreased at a rate of approximately 12% each year, approximately how many Pandas remain in the world today?
4. Approximately how many Pandas can we expect to have in the year 2050?
5. A piece of heavy equipment was purchased for $250,000 and is expected to lost value at a rate of approximately 14% each year.

What would be the value of the equipment in:

A. 5 years?

B. 10 years?

1. In 1968, Zippy bought a Volkswagen Beetle for $2698.15 so that he could drive his friends to Woodstock. The value of the car has depreciated at an average rate of 11.7% each year. What is the car worth today?

5. A population of 100 frogs increases at an annual rate of 22%. How many frogs will there be in:

A. 5 years?

B. 10 years?

C. 25 years?

6. A type of bacteria has a very high exponential growth rate at 80% every hour. If there are 10 bacteria, determine how many there will be in:

A. 5 hours

B. 1 day

C. 1 week

7. A species of extremely rare, deep water fish has an extremely rarely have children. If there are a 821 of this type of fish and their growth rate is 2% each month, how many will there be in half of a year, in 1 year and 10 years?

A. Half a year (6 months)

B. 1 year (12 months)

C. 10 year

Multiple Choice:

8. The population of Henderson City was 3,381,000 in 1994, and is growing at an annual rate of 1.8%. If this growth continues, what will the approximate population of Henderson City be in the year 2000?

a) 3,696,000

b) 3,798, 000

c) 3,763,000

d) 3,831,000

**9.** A culture of bacteria contained 3,842,700 cells on one day and is growing at a daily rate of 6.8%. How many cells would be present 4 days later?

a) 4,999,442

b) 5,043,878

c) 5,339,404

d) 15,370,800

10. Find a bank account balance if the account starts with $100, has an annual rate of 4%, and the money left in the account for 12 years.

11. In 1985, there were 285 cell phone subscribers in the small town of Centerville. The number of subscribers increased by 75% per year after 1985. How many cell phone subscribers were in Centerville in 1994?

12. The population of Winnemucca, Nevada, can be modeled by  where t is the number of years since 1990. What was the population in 1990? By what percent did the population increase by each year?

13. You have inherited land that was purchased for $30,000 in 1960. The value of the land increased by approximately 5% per year. What is the approximate value of the land in the year 2011?