

Exponential Growth and Decay Word Problems

Name: _____

SHOW YOUR WORK OR YOU WON'T GET CREDIT!

- 1) If the starting population of 5 rabbits grows at 200% each year, how many will there be 20 years?
- 2) If the starting population of 5 rabbits grows at 200% each year, how many will there be 50 years?
- 3) A population of 100 frogs increases at an annual rate of 22%. How many frogs will there be in 5 years?
- 4) Using this same model for the exponential growth of the frogs from #3, what will be the frog population in 10 years?
- 5) Using this same model for the exponential growth of the frogs from #3, what will be the frog population in 50 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 5 hours.
- 7) Using the model from #6, how many will there be in 1 day?
- 8) Using the model from #6, how many will there be in 1 week?
- 9) A species of extremely rare, deep-water fish 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?
- 10) Using the model from #9, how many will there be in 10 years?

- 11) Using the model from #9, how many will there be in 100 years?

- 12) The population of Anywhere City was 3,381,000 in 2010, and is growing at an annual rate of 1.8%. If this growth continues, what will the approximate population of Anywhere City be in the year 2031?

- 13) Using the model in #12, what will the population be in 2049?

- 14) 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?

- 15) Frank purchased an air cooler for \$3,000 in the year 2010. Its value depreciates by 8% each year. What is the value of the air cooler in 2013?

- 16) The price of gold is \$400 per 10 grams in the month January. It loses its value at a rate of 5% per month. Find the cost of the 10 grams gold in the month of August.

- 17) Using the model in #16, find the price of 10 grams of gold in the month of December.

- 18) The cost of a company's share is \$200 in the first week of the year. It loses its price at a rate of 2% per week. What will be the value of the share after 2 weeks?

- 19) A car bought for \$13,000 depreciates at 12% per year. What is its value after 7 years?

- 20) Using the model in #19, what will be its value after 20 years?