

1. The population of wolves in a forest is increasing at a rate of 2.5% per year. The initial population is 240 wolves.
  - a) Write an exponential function that relates the population and the time, in years, from now.
  - b) What will be the population in 6 years?
  - c) In how many years will the population double?
  
2. A certain culture of bacteria, triple every 25h. The initial count of shows 1000 bacteria present.
  - a) Write an exponential function that models the given conditions.
  - b) Approximately how many bacteria will there be in 4 days?
  - c) How many bacterial were there 3 days prior to the count?
  - d) When will there be 10000 bacteria?

3. After each washing, 1% of the dye in blue jeans is washed out. How much of the original dye remains after 50 washings?
4. A certain culture of bacteria, triple every 20h. The initial count shows 2 bacteria present.
  - a) Write an exponential function that models the given conditions.
  - b) Approximately how many bacteria will there be in 6 days?
  - c) At what time will there be 1000 bacteria??
5. The intensity of the light below the surface of a particular lake is reduced by 4% for every meter below the surface.
  - a) Write an exponential function that models the intensity of the light at any depth below the surface.
  - b) What percent of the original intensity of light remains 10 m below the surface?
  - c) Use a graph to determine how far below the surface the light has to travel for the intensity to be 30% of the surface intensity.

6. In your quest for greatness you discover a new element. The half-life of the newly discovered element is 5.6 hours.
- a) Write an exponential function that models the half-life of the element for any initial amount.
  - b) What percent of the original element is there in 3 days?
  - c) Use a graph to determine when there will be 15% of the element remaining.
7. The population of a town is increasing at an average rate of 1.5%/ month. If there are 2301 people in the town this month.
- a) How many people will be in the town 2 years from now?
  - b) How many people were in the town two years ago?
  - c) How many months will it take for the population to reach 2850 people?