

RIDDLE
PRE-CALCULUS
WORD PROBLEMS

NAME _____

1. Byron received a total of \$700 in cash gifts for his high school graduation. He is going to invest his money in a savings account so that he can buy a car after he graduates from college. The Brentwood Savings and Loan offers a statement savings account that pays 4.5% APR compounded quarterly. At this rate what would the balance of Byron's savings account be after four years?

2. Another bank in Byron's town offers an account with 4.4%APR with the interest compounded continuously. Which is the better offer?

3. Phosphorus-32 is a radioactive substance with a half-life of 14.3 days. How long would it take to reduce a 100-gram sample of P-32 to 15 grams?

4. Under ideal conditions, the population of a certain bacterial colony will double in 45 minutes. How much time will it take for the population to increase five-fold?

5. Kim is studying bacteria in her advanced biology class. She has calculated that $k = 0.658$ for a certain type of bacteria when time is measured in hours. How long would it take for 15 of these bacteria to multiply into 250 bacteria?

6. A major highway was constructed five years ago to accommodate a population of up to 40,000 commuters. It was estimated that the commuter population at that time was about 25,000.
Today there are 31, 000 cars commuting on the highway each day.
 - a) If the commuter population continues to grow at this rate, when will the highway need to be upgraded again?

 - b) How many commuters will the upgraded highway have to accommodate to meet the additional demand in 10 years?