**Population Growth and Other Word Problems**

**The Elk Population**

1. C:\Documents and Settings\kkelley\Local Settings\Temporary Internet Files\Content.IE5\TBHO9DEA\MC900057354[1].wmfThe table shows that the elk population in a state forest is growing exponentially. What is the growth factor? Explain.

**C:\Documents and Settings\kkelley\Local Settings\Temporary Internet Files\Content.IE5\TBHO9DEA\MC900057354[1].wmfGrowth of Elk Population**

|  |  |
| --- | --- |
| **Time (Year)** | **Population** |
| 0 | 30 |
| 1 | 57 |
| 2 | 108 |
| 3 | 206 |
| 4 | 391 |
| 5 | 743 |

1. Suppose this growth pattern continues. How many elk will these be after 10 years? How many elk will there be after 15 years?
2. Write a NOW-NEXT equation you could use to predict the elk population *p* for any year *n* after the elk were first counted.
3. Use this equation to write an explicit equation in function notation to predict the elk population *p* for any year *n* after the elk were first counted.
4. In how many years will the elk population exceed one million?

**For problems 6 and 7, write a NOW-NEXT equation and an explicit equation in function notation before find the solution(s) to the problems.**

1. Suppose there are 100 trout in a lake and the yearly growth factor for the population is 1.5. How long will it take for the number of trout to double?
2. Suppose there are 500,000 squirrels in a forest and the growth factor for the population is 1.6 per year. Write an equation you could use to find the squirrel population *p* in *n* years.
3. Currently, 1,000 students attend East Garner IB Magnet Middle School. The school can accommodate 1,300 students. The school board estimates that the student population will grow by 5% per year for the next several years.
4. In how many years will the population outgrow the present building?

1. Suppose the school limits its growth to 50 students per year. How many years will it take for the population to outgrow the school?
2. Suppose that, for several years, the number of radios sold in the U.S. increased by 3% each year.
3. Suppose one million radios sold in the first year of this time period. About how many radios sold in each of the next 6 years?
4. Suppose only 100,000 radios sold in the first year. About how many radios sold in each of the next 6 years?
5. Suppose a movie ticket costs about $7, and inflation causes ticket prices to increase by 4.5% a year for the next several years.
6. At this rate, how much will tickets cost 5 years from now?
7. How much will a ticket cost 10 years from now?
8. How much will a ticket cost 30 years from now?
9. When will a ticket cost $25?