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**Population Growth Homework Problems**



1. There is a population of beetles that has 3000 individuals. In one month, there are 400 births

 and 150 deaths. Calculate the **individual** growth rate.

2. A population of 300 butterflies exhibits logistic growth. If the carrying capacity is 500

 butterflies and r = 0.1, what is the population growth rate? In other words, how many

 individuals are added to the population in one generation?

3. You collect the following information during a one-year period. There are at the start of the

 year 1,000 deer on the island; 120 deer die, 200 deer are born, 20 immigrate, and 10 emigrate.

 Calculate the population growth rate.

4. You set raccoon traps around an area and find that the population of raccoons is approximately

 2,000. Over the course of the next year, you determine that 300 raccoons are born and 290

 die. Calculate the population growth rate.

5. A population of crows exhibits logistic growth. If the population is 250 birds, and in a one-year period there are 100 births and 45 deaths, what is the per capita growth rate? If the carrying

capacity is 400 birds, what is the population growth rate? *Determine per capita growth rate (r) first, then use logistic growth equation.*

6. If per capita birth rate is the number of organisms born “per person” in a certain amount of time (usually 1 year), what is the per capita birth rate in a population that has 34 births per 1,000 individuals?

7. If the per capita birth rate in a population is 0.05, how many organisms are added to this

 population in a year, if the population has 500 individuals at the beginning of the year and the

 carrying capacity has not been reached yet?

8. In 2006, the United States had a population of about 300 million people. If there were 14

 births and 8 deaths per 1,000 people, what was the country’s net population growth that year

 (ignoring immigration and emigration, which are substantial)? Do you think the United States

 is currently experiencing exponential population growth? Explain.

9. The size of a hypothetical population is 25 organisms. Its maximum rate of increase is 1. The

 carrying capacity of the environment is 1,500 organisms for this species. What is the growth

 rate of this population (dN/dt)? What type of growth model does this population likely follow

 the next year?

10. The same population as in question 9, increased and reached 1,500 organisms. The intrinsic

 rate (rmax) of increase is still 1. What is the growth rate of the population in this case? What

 type of growth model does this population follow next year?