

1. A population F_t of fruitflies (*Drosophila*) depends on time t . The initial population is $F_0 = 1000$ flies. The population is censused once every two (2) weeks. Over this period the natural rate of increase is 0.8%. At each census 40 flies are removed from the population and sacrificed for genetic analysis.
 - a. If r is the natural or intrinsic rate of increase then numerically (decimal form, not percent), $r =$ _____ .
 - b. Write a difference equation that expresses this process (assume a discrete model). Your model equation should tell us how to compute **the change in F** .
 - c. Rewrite your equation in updating form, or do this from scratch from the information provided.
 - d. Compute the population after one month (4 weeks). Be careful! Should you compute F_4 or something else?

2. During the 1980's Costa Rica had the highest deforestation rate in the world at 2.9% per year. Deforestation (meaning loss of forested land) is a continuous process.
- a. If $F(t)$ is the amount of forested land, write the model equation for this process.

 - b. Give the explicit solution to this equation.

 - c. (bonus) If $F(0)$ represents the amount of forested land in 1980, what percent was forested in 1990?