

# POPULATION GROWTH SIMULATIONS WITH STELLA ONLINE

## OBJECTIVES

Explore an online population dynamics simulation model.

## INSTRUCTIONS and PRODUCTS

1. Go to the following web site and select Population Dynamics Model (Java Version).  
<http://www.shodor.org/succeed/models/>
2. Set Initial Population at 100, Birth Fraction at 100/1000 (10%), Death Fraction at zero, Total Run Time at 50 years, Time Step at .25, and your choice of Graph Type. Run Model.
  - A. How long does it take to double the population size?
  - B. Does this time to double the population agree with the general rule about population doubling time?
  - C. What does your textbook call Birth Fraction (Births/1000)?
3. "Play" with the model, but change only one parameter at a time so you can keep track of what effect each parameter has on the population growth. Start with Death Fraction. Change it from zero to 5.
  - A. What happens to the doubling time?
  - B. What is the population growth rate for this model?
  - C. Is the doubling time what you would expect for this new growth rate?
  - D. What is "Birth Fraction minus Death Fraction" using the terminology in your textbook?
  - E. If there is no emigration or immigration for this population, what else can you call "Birth Fraction minus Death Fraction" according to your textbook?
4. Try different "Birth Fraction minus Death Fraction" sums (independent variable) and note the effects on population growth (dependent variable).
  - A. Record the values you chose and the results they produced.
  - B. Describe this experiment and outcome.