Dear Deer, Run away now.

Our goal is to model the population of a species of animal that is commonly hunted, such as deer (see harvesting model in section 2.2). We assume that the hunted animal's population grows logistically (see previous model) with the added caveat that every year schools close down so that a certain number can be "harvested".

The population has a **Base Growth Rate** and a **Capacity**. Each year, we update the **Population** by adding **Births** and subtracting **Harvest**. The number of births each year is:

Births = Population * Base Growth Rate * (1-Population/Capacity)
Saturation= Population/Capacity (from logistic growth).

In your initial model, start with the following values:

- Initial population = 200
- Capacity = 1000
- Base growth rate = 0.6
- Harvest rate = 50

1. Build a model that describes the deer population over time.

Additional questions to explore

2. Graph Births, Harvest, and Surviving Adults in a Stacked Column or Stacked Area graph and use scroll bars to see how things change as you vary the Harvest rate.
   a. For example, can you identify an equilibrium point?
   b. Find an equilibrium point analytically.
   c. Can you find a harvest rate that eradicates the deer population?

3. Make the Harvest rate a percentage of the total population, start with 10%.

Optional (but worth checking out)

4. Create a cobweb graph (steps can be found on pages 45 & 46) for the proportional harvest model.