



SfS Away from the Classroom!

LS06: Population Changes (Recommended for Grades 6-8)

Please use the following resources to learn about population changes

Watch this Video: <https://www.youtube.com/watch?v=ozW7y-y6Ymw>

Answer these questions:

- What is carrying capacity?
- What are 4 (of the 7) limiting factors of carrying capacity?
- What happens when a population exceeds its carrying capacity?

Activities: Play a game where you simulate changes in the populations of snakes and of hawks over several years in a nearby National Park.

You will need:

<ul style="list-style-type: none">• Paper• Pencil	<ul style="list-style-type: none">• 2 Dice• Calculator
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Your National Park starts with a population of 10 snakes and 4 hawks. Follow these steps to see how your population of each species changes from year to year.

1. Determine if there are enough resources for all snakes to live.
 - a. For 2-20 snakes in the Park, there will be enough resources.
 - b. For 20-70 snakes in the Park, there will not be enough resources and $\frac{1}{4}$ of your snakes will die.
 - c. For 70-100 snakes in the Park, there will not be enough resources and $\frac{1}{2}$ of your snakes will die.
2. Determine how many offspring the snakes will have by rolling 1 die.
 - a. Roll 1-4 and the snake population will double.
 - b. Roll 5-6 and the snake population will triple.
3. How many snakes will not survive due to predators. For every 1 hawk in the Park, 1 snake will die.
4. Determine if there are enough resources for all hawks.
 - a. If snakes outnumber the hawks and there are fewer than 50 hawks, all hawks survive.
 - b. If snakes outnumber the hawks and there are more than 50 hawks, $\frac{1}{2}$ of the hawks die.
 - c. If there are fewer snakes than hawks, $\frac{1}{2}$ of the hawks die.
5. Determine how many offspring the hawks will have. Every year, the population doubles.
6. Determine if any other limiting factors will affect your populations by rolling 2 dice.
 - a. Roll 2 or 12 and there is a forest fire: $\frac{3}{4}$ of the snakes and $\frac{3}{4}$ of the hawks will die.
7. Record the number of hawks and snakes remaining at the end of the year.
8. Repeat steps 1-7 for 7 or more years, to see how your populations change over time.



Make observations & use Claims, Evidence, and Reasoning!

1. **Claim:** Populations reach a point where they cannot continue to grow.

- **Evidence:**

- **Reasoning:**

2. **Claim:** Predators and prey control each other's population sizes.

- **Evidence:**

- **Reasoning:**