Sci 9 Simulating Predator Prey Relationships

**Materials:**

200 Small coloured squares (2cm2) to represent rabbits,

12 Large coloured cards (8cm2) to represent wolves, data table, graph paper.

**Rules:**

1. Working in groups of three, decide who will control the prey and who will be the predators.
2. Predators and prey must stand **back from table 0.5m when tossing squares**.
3. The data controller records all the data for each round in the data table.
4. If predator covers half or more of a prey square, consider it captured (eaten) and remove it from habitat.
5. In each round, each predator must capture at least 3 prey to survive. If it does not capture 3 or more prey, the predator dies and is removed from habitat.
6. Each predator that survives a round gets to reproduce (add one more predator for each survivor).
7. If all predators die, then one new predator may enter the habitat next round.
8. The prey population doubles each generation. (if 10 prey survive, next round starts with 20).
9. The maximum carrying capacity of this forest is 200 prey. (Carry capacity is the ability of an ecosystem to supply enough resources such as food, water, and shelter for continued survival).

**Procedure:**

1. Standing 0.5 m away, begin by tossing 3 prey into “habitat”.
2. Standing 0.5 m away, Predator tosses 1 predator at prey.
3. Record how many prey have been captured, number of prey surviving, number of predators surviving to reproduce (and therefore how many will be added). Double the number of surviving prey.
4. Continue the simulation for 20 rounds (generations) or until all the prey animals are captured.
5. Construct a graph, **using the full page:**
6. Label x-axis “Generations” 1-20
7. Label y-axis “Population Numbers”. Determine the intervals you will use to plat the populations numbers.
8. Play “Total Prey Animals” and “total Predators” BOTH lines on the SAME graph.
9. Connect your data points for each data set, using different colours.
10. Provide a legend.
11. Give your graph a title

**Name:**

**Questions:**

* 1. Describe the relationship between the prey and predator lines in your graph.
  2. Predict what the graph would look like after 12 generations if all the **predators** were lost to a disease. Make a quick sketch of this graph.
  3. Predict what the graph would look like after 12 generations if all the **prey** were lost to a disease. Make a quick sketch of this graph.
  4. Predict what would happen to the predator and prey populations if half of the prey animals’ habitat were destroyed by the construction of a shopping mall.
  5. Discuss what you think might happen to both the rabbit and the wolf populations if a new prey species was introduced, like an easy to catch prairie chicken.
  6. Tired of eating rabbit stew, hunters introduce a new prey called the snork. What do you think would happen to both wolf and rabbit populations if the snork ate the same type of food as the rabbit and was harder to catch?