***Biology 1*** Name:

Hour:

***Introduction***

Experimental design is a crucial part of the scientific process. It is important that only one variable is being investigated in an experiment. This is called the experimental variable. The experimental variable is changed by the experimenter and a response is measures in some other variable. It is important to control (keep constant) as many of the other variables as possible to ensure result are the product of the experimental variable being manipulated. Simulations can also be a helpful way of gathering data about phenomena in which many variables are in play. You will use a simulation today to figure out what impact various factors have on predator and prey populations.

***Instructions***

Use the simulation to fill in the chart below. The simulation can be found at:

[***http://www.phschool.com/atschool/phbio/active\_art/predator\_prey\_simulation/***](http://www.phschool.com/atschool/phbio/active_art/predator_prey_simulation/)

1. Explore the variable “sliders”. Take the time to discus and record what each variable is (define it.) You can do this using your prior knowledge, working with your partner and/or looking it up. Record this in the second column of your data table.
2. Set all the variable sliders to their mid-point.
3. The object of this activity will be to determine the impact of each of these variables on the graph of predator and prey populations. Therefore, you can reset the simulate at any time if it helps you to determine the impact of the changes you make. You will change one variable at a time. Slide the slider left or right or both directions and observe the impact to the predator and prey populations on the graph.
4. Explain the impact to each population in simple terms. Ex: “it still fluctuated but at a higher/lower level” – Be sure to focus on the change that you notice. Record this in the third and fourth columns of your data table.
5. Work with your partner to come up with an explanation for why the two populations responded as they did. Be sure to address both populations. Record this in the last column of your data table.

***Data:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Variable*** | ***What do you think this means? Define.*** | ***What happens to the MOOSE population?*** | ***What happens to the WOLF population?*** | ***Explanation – Why did the populations respond as they did?*** |
| Initial Predator Population |  |  |  |  |
| Predator Death Rate |  |  |  |  |
| Predator  Effectiveness |  |  |  |  |
| Initial Prey Population |  |  |  |  |
| Prey Birth Rate |  |  |  |  |
| Habitat Variability |  |  |  |  |
| Carrying Capacity |  |  |  |  |