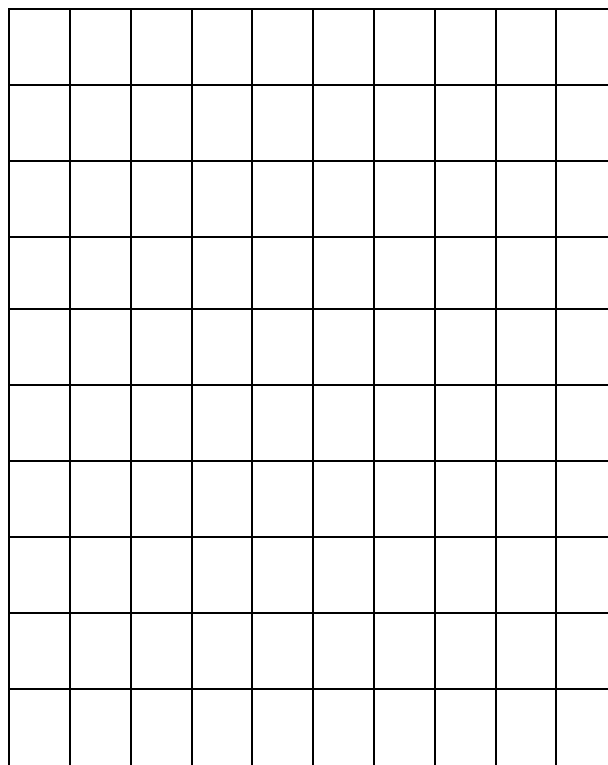




Under normal conditions, however, there are limits to how large a population can grow. If a population experiences exponential growth, then it does so only for a limited amount of time. Eventually, populations reach their **carrying capacity**. This is the maximum number of individuals of a population that can occupy a certain habitat. Carrying capacity is regulated by **density dependent factors**. Examples of density dependent factors include resource availability, waste production, competition, predation, and disease. There are also **density independent factors** (fire, drought, landslides, earthquakes, temperature), but these factors influence the population regardless of its size.

Imagine that the population of snowshoe hares from the first example has a carrying capacity of 50. Draw a graph that would show this using the graph below. Label the graph components (axes, title) as well as carrying capacity and exponential growth.



**Questions:**

1. Some people describe the graphs you made as "S" and "J" shaped graphs. Why do you think they have these names?
2. Which is the "S" shaped?
3. Which is the "J" shaped?
4. What is carrying capacity?
5. One of the factors that limit population size is resource availability. What are examples of these resources?
6. Explain the types of competition the snowshoe hare might encounter.
7. What would happen to the snowshoe hare population if there was an unusually harsh winter (weather)? What type of limiting factor is this an example of?

8. Populations don't actually stay constant at their carrying capacity. Instead they fluctuate, a little above and then a little below. Explain why this occurs.

9. What is the one species that continues to exhibit exponential growth and has not reached its carrying capacity yet? Why do you think this is?