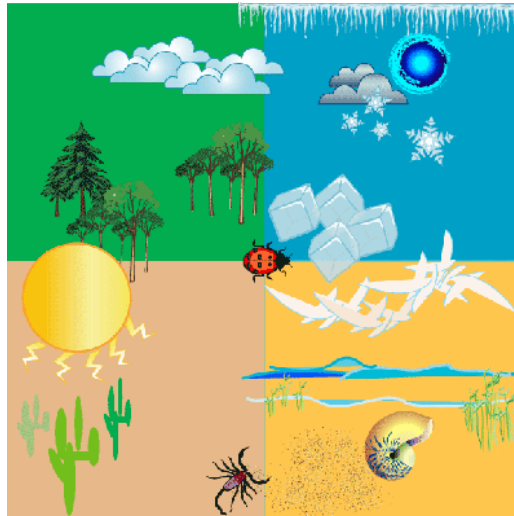


Earth Science I – II Worksheet

Abiotic vs. Biotic Factors:

1. Using the following image, list all the abiotic and biotic factors that you see:



Abiotic Factors	Biotic Factors
clouds	ladybug
ice	scorpion
shell	cactus
snow	trees
sun	plants

Limiting Factors and Carrying Capacity

2. Suppose a bear must eat 10 fish a day to survive. The river nearby provides about 100 fish a day without harming the fish population. Five bears could easily live in this area because they would only need 50 fish in total. But if there were 15 bears they would not all survive because there would not be enough food. No matter how much shelter and water there was, the population would not get larger than **10 bears** for any extended period of time.

a. How can food and water limit population growth?

Without enough food & water, the bears would starve
↳ there is currently only enough food & water for 10 bears.

b. Is food a limiting factor for plants? Why or Why not?

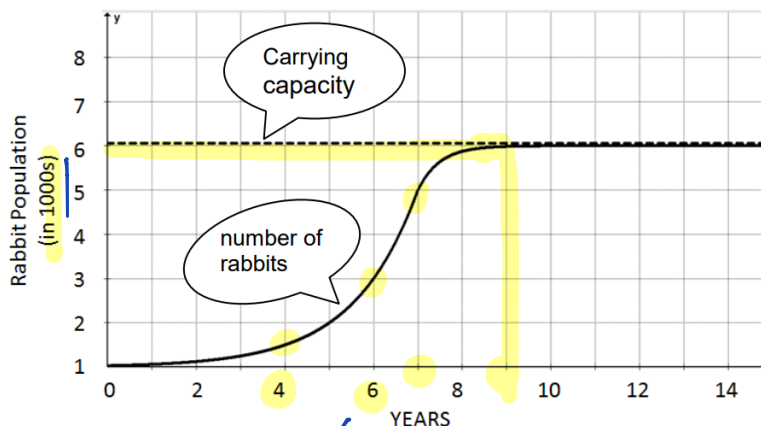
Yes! Plants need sunlight, nutrients (from soil), and water to survive.
in limited supply.

3. **Seagulls** come to nest on rocky shores, but the nesting shores get very **crowded**. If a pair does not find room to nest, they will not be able to add any offspring to the seagull population. If there were more nesting space, more seagulls would be able to nest, and the population would increase.
- a. Why might space be a limiting factor for animals? How would this impact the size of the population?
Space is needed for animals to live & produce offspring
↳ Without more space, the population won't grow.
4. The **amount of space** in which a plant grows determines whether the **plant** can get the sunlight, water, and soil nutrients it needs. For example, many small plants sprout each year in a forest. But as they grow, the roots of those that are too close together run out of space and some of the plants will die. Branches from other trees may block the sunlight the small plants need. Some of the small plants might die, limiting the size of that plant population.

What are two ways in which space is a limiting factor for plants?

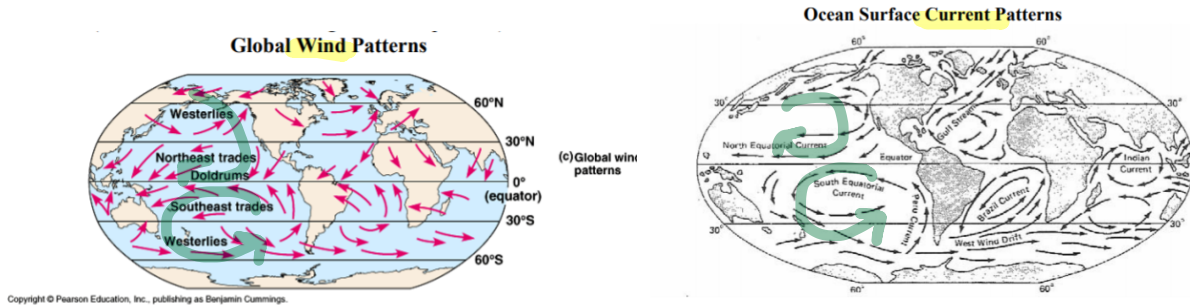
- a. *Soil space - roots are overcrowded*
- b. *Amount of sunlight - bigger trees block light from reaching smaller plants.*

5. Use the following graph for the following questions:



- a. In the graph, the carrying capacity is 6000 rabbits.
- b. How many rabbits were in the population in...
 4 years? 1500 6 years? 3000 7 years? 5000
- c. How many years did it take for the rabbits to reach their carrying capacity?
9 years
- d. What may have caused the rabbits population to reach carrying capacity?
There was enough food & space
↳ more reproduction
↳ more population
- e. What would happen if the population exceeded (went over) the carrying capacity?
There would be an overshoot period
↳ resources in the environment get used up
↳ carrying capacity degrades

6. Compare the following diagrams below:



- a. In general, the direction of the wind flows in the Same direction as the ocean surface currents.
- b. In the first map, the global winds will travel either in the **clockwise** or **counterclockwise** direction.
- i. In the Northern hemisphere, the general direction is clockwise.
- ii. In the Southern hemisphere, the general direction is counterclockwise.
- c. The difference in direction is caused by the Coriolis effect.

7. Label each of the currents on the blank ocean currents map by writing the name next to the arrow. Color **warm-water currents in red** and **cold-water currents in blue**.

Number	Name of Surface Current	Characteristic Temperature of Water Transported by Current
1	California Current	Cold
2	Canary Current	Cold
3	Gulf Stream	Warm
4	Kuroshio Current	Warm
5	East Australian Current	Warm
6	Benguela Current	Cold
7	Brazil Current	Warm
8	Peru Current	Cold
9	Antarctic Circumpolar Current	Cold

