

Name: _____

Date: _____

Hour: _____

Citation, adapted from: Layton, J. (2008). Has Earth reached its carrying capacity? HowStuffWorks. Retrieved from <http://science.howstuffworks.com/environmental/green-science/earth-carrying-capacity.htm>

WHAT'S THE EARTH'S CARRYING CAPACITY?

The maximum population of a species an environment can sustain is called the *carrying capacity* of the environment. Carrying capacity estimates can vary widely. Estimates depend on assumptions scientists make about the types of species populating that environment and the behaviors and adaptations of these species to their environment. For example, if all humans were still hunter-gathers, then scientists estimate humans would have reached the carrying capacity of Earth at approximately 100 million people. However, humans have adapted to Earth's environment by living in high-rise buildings and finding new ways to increase food production, so the human population is well above 100 million.



If all humans still led the hunter-gatherer lifestyle of the Mentawai people of Indonesia, we would have reached our carrying capacity long ago.

Citation: Travel Ink. Siberut Island, Sumatra, Indonesia. Getty Images.

Retrieved from

<http://www.gettyimages.com/detail/photo/siberut-island-sumatra-indonesia-high-res-stock-photography/79472996>

So what is Earth's carrying capacity? Scientists still debate this question. Some scientists believe that more and more people are moving toward a "North American" standard of living. Were all humans to adopt this standard of living, the Earth would only be able to sustain about 2 billion people. However, other scientists believe that humans are once again adapting and changing lifestyles to conserve food and water. If people learn to only consume what they must to survive, then scientists believe the carrying capacity of Earth could be as great as 40 billion people.

Question: Should we be worried about population growth? Write a brief memo explaining why or why not. Your memo must include the following:

- Issues we might face as our population starts to reach carrying capacity.
- An exponential model for the world population.
- *Justified* estimates for the world population in 100, 1000, and 10,000 years.
- A *justified* estimate of when world population will reach the Earth's carrying capacity.
- A *justified* estimate for the maximum percent population change that will ensure we do not reach carrying capacity for at least two thousand years.