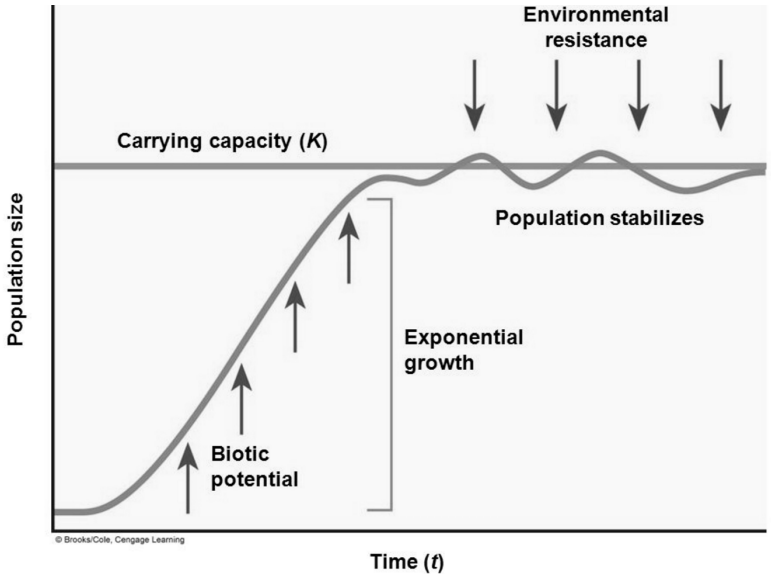
Lab 12, Biol-1, C. Briggs, revised Fall 2017

Population Growth

Objectives

- Get familiar with a graph of population size vs. time, showing the biotic potential, carrying capacity, and environmental resistance.
- Be able to draw a general graph of human global population over time.
- Be able to define natality, mortality, immigration, and emigration.



Year	Population	Time to increase by one billion (in years)
8000 BCE	5,000,000	n/a
1650 CE	500,000,000	n/a
1800 CE	1,000,000,000	all of human history
1930	2,000,000,000	
1960	3,000,000,000	
1975	4,000,000,000	
1987	5,000,000,000	
1999	6,000,000,000	
2011	7,000,000,000	
Current year		n/a

Graph axis practice

If your data included these dates, label the axis accordingly. Draw a small circle where each date would fall.

(a) 1200, 1400, 1600, 2000

_____

(b) 1200, 1250, 1600, 2000

_____

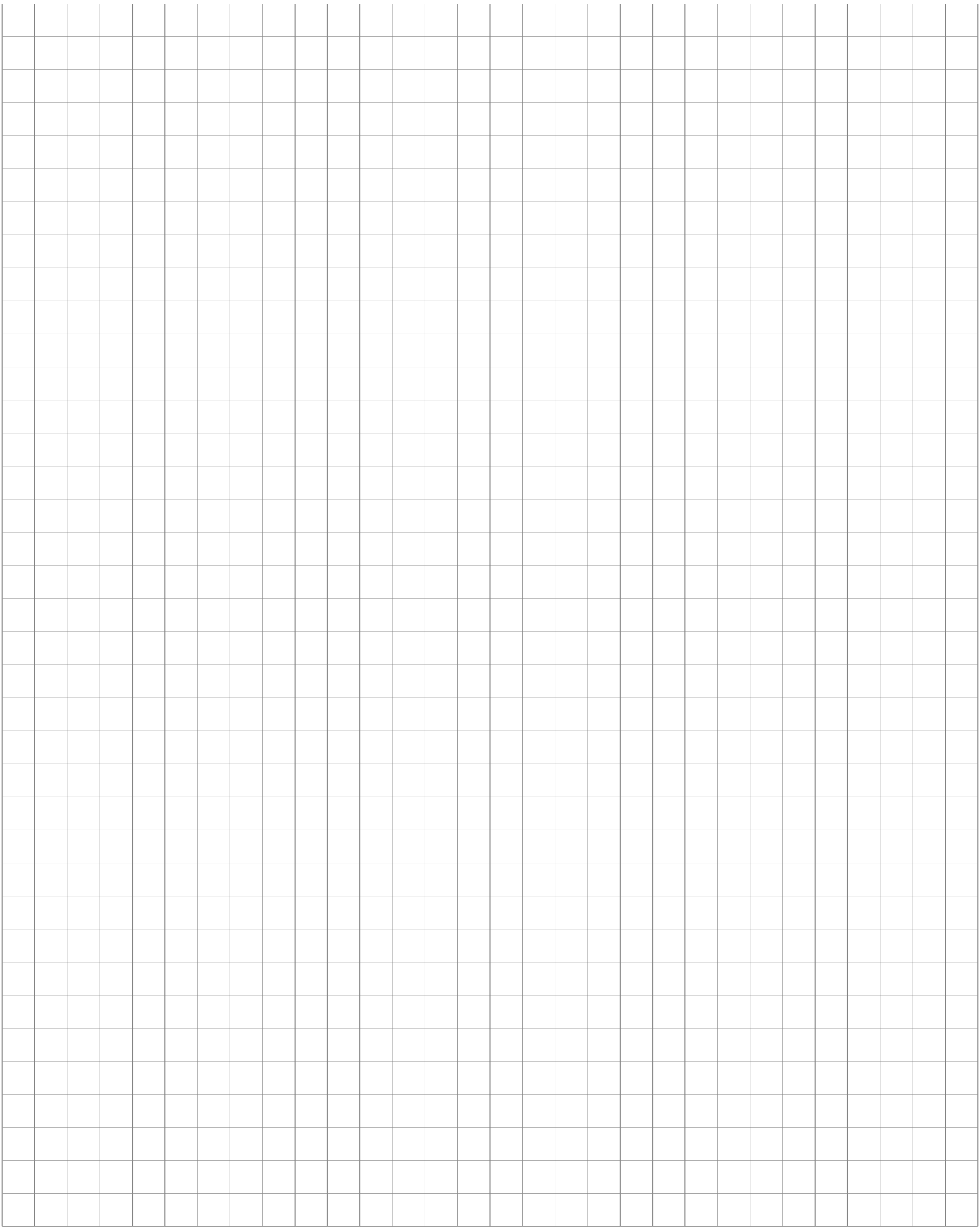
(c) 0, 1500, 2015

_____

(d) 7000 BCE, 1500, 1999, 2000, 2015

_____

Draw a graph of human population size over time, based on the data table above. (Be careful to make the time-axis **consistent**. We'll discuss how.)



Resource Discussion

Objectives
Become familiar with variations in characteristics of human populations, in different parts of the world.

Which region of the world seems to have the:

largest population?

highest growth rate?

shortest life expectancy?

highest consumption of resources?

Discussion questions

1. Are extreme wealth and energy consumption required for health? What evidence do you have for this?

2. If we are interested in improving quality of life for as many people as possible, where should we direct our attention? Why?

3. What region's standard of living seems like the best model for a sustainable human population? Why?

Ethics Discussion

Objectives
Engage in conversation with your classmates about some complex ethical issues around human population growth.

Introduction
The world human population has grown at an unprecedented rate over the past three centuries and has a J-shaped growth curve. If the current rate of 2% per year growth persists, the population will double in only 35 years. Most of the growth will occur in less-developed countries. There is now serious concern among scientists that the number of people in the world and our impact on the environment will overload the life support systems of Earth.

Instructions
Discuss the next five questions with the people at your table for 5-10 minutes each. Be sure to hear from everyone in your group. There are no correct answers for this section. Write at least an outline of your conclusions.

1. Although the whole planet's carrying capacity has not been determined, what do you think the carrying capacity of Earth is? Are we already over the carrying capacity or not, and why do you feel this way?

2. Do you think we should try to regulate birth rates in less-developed, overpopulated countries? What problems must be overcome in convincing people of other cultures to implement birth control methods?

3. Many people believe that technology (such as wheels or fire) has increased the carrying capacity for the human population. Give some other examples of technology that may have impacts on our carrying capacity.

4. The US has about 10% of the human population on Earth, but it uses about 40% of the Earth's resources. Do you think this is acceptable? Should a person in the US be looked at in a different view than a person in a less-developed country?

5. What should be done about environmental problems (such as acid rain and ozone depletion) caused by one region, but affecting others?

STI Transmission

Objectives

- Observe likely transmission rates of a sexually-transmitted infection.
- Learn about resources available regarding safe sex.

Number of students in class today: _____

Number with positive results at end of simulation: _____

% infection rate = # positive / # students in class x 100

% infection rate: _____

The Mt. SAC Health Center provides sexual health services, including routine gynecological and testicular examination, sexually transmitted infections screening (including HIV), pregnancy tests, birth control pills, emergency contraception and condoms.

Lab 12 Assignment

1. Turn in this completed handout.
2. Write a list of everything you throw away in one particular day. Also, write a brief description of what you notice. (For example, consider the amount of material, what the waste is made of, alternatives to your current practice, or other themes.)