AP Environmental Science
DEMOGRAPHIC FACTS OF LIFE ACTIVITY (From Earth Matters)

PART 1: DOUBLING TIME
Birth and death rates determine the rate of population growth. If the birth and death rates are similar, a population experiences little or no growth. When the birth rate far exceeds the death rate, the population soars. These rates are expressed as the number of births or deaths for every 1,000 people in a given year. For instance, in 2002, the world's birth rate was 21 per 1,000 and the death rate was 9 per 1,000. Using the formulas below, we can determine the world's annual growth rate and the number of years it will take the population to double if the growth rate remains constant.

Annual rate of natural population change (%) = [(birth rate - death rate)/1000 persons] x 100

Using the data for 2002,
Annual rate of natural population change (%) = [(21 - 9)/1000] x 100 = 1.2 %

Doubling time (in years) = 70/rate of increase

Doubling time = 70/1.2 = 58 years

Complete Table 1 and discuss the following questions. Choose a recorder to write your answers.

TABLE #1

Country	Birth Rate, 2000 (per 1,000 people)	Death Rate, 2000 (per 1,000 people)	% Annual Natural Increase	Doubling Time (Years)
China	14	7		
India	25	9		
Iraq	35	6		
Italy	9	10		
Japan	10	8		
Kenya	32	15		
Mexico	23	5		
Russia	9	14		
South Africa	20	14		
United Kingdom	11	10		
United States	14	9		

DISCUSSION:

1. Why do you think some countries are doubling much more rapidly than others? Why do you think some countries, such as Italy, have reached zero population growth?

2. Which figures differ most greatly between countries, the birth rates or the death rates? How would you explain the wide disparity in birth rates among different countries? Why are death rates relatively low in many countries with high birth rates?

3. If you were a national leader in Kenya or Iraq, would you be concerned about the rapid population growth? Why or why not? Similarly, if you were a national leader in Italy, would you be concerned that your country has reached ZPG? Why or why not?

4. The population of the U.S. is actually growing at the rate of about 1 percent each year, more than its rate of natural increase. Where is the additional population growth coming from?

PART 2 - GRIM REAPER'S REVENGE

According to the 2002 data, we are currently adding 79 million people (net growth) to the world each year or 216,000 people each day. Conveying the importance of such figures can be difficult since the numbers are so large they lose their meaning. Complete Table # 2 below.

Below is a listing of some of the world's worst disasters, along with an approximate death toll. At today's present rate of growth, determine how many days, weeks, or months (depending on the tome frame) it would take to replace those lost. Round off to one decimal place.

TABLE #2

Historical Disasters (remember these are estimates—you may find a range of estimates)	Approximate number of deaths	Present world population growth replaces this number in approximately what time span?
U.S. motor vehicle deaths, 2001	43,722	
Bangladeshi cyclone, 1991	140,000	
HIV/AIDS deaths, India, 2001 estimate	310,000	
Influenza epidemic, 1918 American deaths	500,000	
Total American deaths in all wars	600,000	
Great flood, Hwang Ho River, 1887	900,000	
Total U.S. automobile deaths through 1995	2,600,000	
India famine, 1769-70	3,000,000	
Total AIDS dead through 1996	6,400,000	
China famine, 1877-78	9,500,000	
Influenza epidemic, 1918	21,000,000	
Global deaths in all wars in the past 500 years	35,000,000	
Bubonic plague, 1347-51	75,000,000	