**AP Human Geography Unit 2 Population Review Answers Mr. Stepek**

*Directions: Please use the sources to answer the questions to the level of prompt indicated.*

**Green = EXPLAIN level, requires causes or effects**

**Red = DESCRIBE level requires examples**

* 1. **Answer the following questions using Sources X and Y, and your knowledge of the demographic transition model:**
1. According to Source X, IDENTIFY the year in which world population reached one billion.

The year in which world population reached 1 billion is 1800. (please note that this answer is a complete sentence. The College Board will not grade responses that are not in complete sentence form. No bullet points, no lists!)

1. EXPLAIN why it only took 130 years for global population to reach 2 billion?

The reason it only took 130 years (1800 – 1930) for world population to reach its second billion is the industrialization that occurred in MDCs. Beginning in Britain and then diffusing to Western Europe, North America and Japan industrialization brought many advances that led to rapid population growth. A more ready food supply through canning and better transportation, improved medicine, urbanization all resulted in a lower infant mortality rate and longer life spans decreasing the death rate. This meant that these countries entered stage two of the Demographic Transition Model which is characterized by exponential population growth.

1. EXPLAIN the main reason why global population doubled between 1930 and 1975?

The main reason that world population doubled again in only 45 years during the middle of the 20th century was the diffusion of medical advancements to LDCs. After WWII, MDCs spread medical advancements such as vaccines, sterilization methods, drug therapies, baby formulas etc. to less developed areas of the world. This dramatically brought down their CDR (crude death rate). However, children in these countries were stilled viewed as economic assets because their economies had not advanced past subsistence agriculture, they continued to have a high CBR (crude birth rate). This pushed these countries artificially (not linked to economic development) into stage two and led to exponential population growth.

1. Looking at Source Y, EXPLAIN what is meant by the graphic labelled “Old Balance”.

The “Old Balance” refers to the situation in stage one of the Demographic Transition Model. It was most of human history until around 1800. During this period of time, crude birth rates were high AND crude death rates were high. These cancelled each other out and population growth was relatively stable/low. People continued to have many children because they were considered economic assets and in anticipation of them not surviving due to a high infant mortality rate. The high infant mortality rate/crude death rate is represented by the headstones in the graphic.

1. Looking at Source Y, EXPLAIN what is meant by the graphic labelled “New Balance”.

The “New Balance” in the graphic represents a late stage three or stage four situation in the demographic transition model. In this situation, the crude death rate has declined due to industrialization in MDCs and the diffusion of medical advances in LDCs. But crude birth rates have also begun to decline. This happens because first people realize that children are no longer economic assets (especially in new urban environments to which they are moving) and then continues to stay low largely due to female empowerment. Declining birth rates will eventually match lower death rates and a “New Balance” will be achieved.

1. Looking at Source Y, EXPLAIN why world population continues to rise despite the “New Balance”.

In the graphic, world population continues to rise even though a “New Balance” has been achieved. This is because the world as a whole is in stage three. Even though birth rates have fallen there is still a large number of young people from previous stages. These people are still in their childbearing years. Even if they only have two children (replacement rate) population will continue to grow because the new children are being offset by the deaths in the much smaller elderly cohorts (grandparents). This phenomenon is called demographic momentum.

* 1. **Answer the following question using map below and your knowledge of the epidemiological transition:**
1. EXPLAIN two reasons how the distribution of deaths from COVID-19 as shown on the map above reflects the epidemiological transition model.

The epidemiological transition deals with the common sources of death based on where a society is within the demographic transition model. On the map, we can see that outside of China (where Covid-19 originated) the main areas of death have been in Europe and North America or MDC regions. This can be explained by two reasons.

MDCs have a much higher population of elderly people. While Covid-19 can affect any age group, elderly people are more likely to die from the disease. Italy, as a stage five country, has one of the largest elderly populations in the world, this it why is has suffered so tragically from Covid-19 deaths.

Another reason is the interconnectedness of stage five countries with the rest of the world. Stage five of the epidemiological transition speaks to the spread of disease through a globally connected world. Italy and Western Europe is one the most highly developed areas of the world and consequently one of the top tourist destinations. This interconnectedness means that more contagious people travelled to Italy without knowing they were sick and then the disease had a devastating impact because of the age of the Italian/Western European population.

1. DESCRIBE an example from the map above on how the distribution of deaths form COVID-19 does not fit the epidemiological transition model.

Exceptions to the epidemiological transition model found on the map would be Iran and Indonesia. Neither one of those countries are in stage five and don’t have high elderly populations which means there must be other factors outside the epidemiological transition to explain their high Covid-19 death rates.

1. **Answer the following questions using the chart below and your knowledge of the demographic transition model:**
2. IDENTIFY the common trend in population dynamics for the selected countries listed.

The common trend shared by all countries on the chart is an aging population.

1. EXPLAIN the economic impact of this trend on those societies.

The economic impact of an aging population is largely negative. As the aged dependency ratio increases, societies must find ways to fund safety net programs to care for old people. The ratio implies that there are less workers to provide taxes to pay for these programs. These programs include things like medical care, retirement income, long-term nursing care. Another economic impact of an increasing aged dependency ratio is a smaller working age population to fill the jobs in a country’s economy which decreases economic activity overall and leads to less wealth in the country.

1. DESCRIBE a strategy that could be used to counteract this trend.

A strategy that can be employed to counteract an aging population would be pro-natalist policies. Pro-natalist policies are intended to increase the birth rate in a society and, over the long-run increase the size of the working age population. An example of pro-natalist policy would be “Do It for Denmark” in which the Danish government paid for people to take romantic vacations in order to increase the birth rate. Other government programs like free childcare and tax incentives for having children would also have a pro-natalist effect.

1. DESCRIBE a different strategy (than the one used under C) that could also be used to counteract this impact.

Another more immediate strategy that a country could take in order to counteract an aging population is to encourage immigration. By encouraging immigration, a country can increase the size of its working age population right away since most immigrants are in the working age cohort. This will immediately create more taxpayers, helping the dependency ratio and raise fund to pay for care for the elderly. An example of countries that have encouraged immigration is recent years is Germany which is a stage five country. Many people have argued that Germany has been more receptive to immigration than other European countries because of its rapidly aging population.

1. **Answer the following questions using the map below and your knowledge of the demographic transition model:**
2. IDENTIFY the world region on the map with the highest rates of natural increase.

The region of the world with the highest natural increase rates is sub-Saharan Africa.

1. IDENTIFY and EXPLAIN the negative cycle that many of these countries may be caught in.

The negative cycle that many countries in sub-Saharan Africa is the demographic trap. The demographic trap has occurred because crude death rates have declined due to the diffusion of medical advances from MDCs. Therefore these countries have to spend a huge portion of their budgets on the provision of services for their huge younger population. This results in them not having the funds to invest things like infrastructure to increase their economic development. Without economic development, people in these countries will still be engaged in activities like subsistence farming. In this instance, children are still viewed as economic assets and female empowerment is still likely low. In turn, the crude birth rate will remain high starting the cycle over again, creating a circular pattern or trap that is difficult to break out of.

1. EXPLAIN a social factor that would be most effective in breaking the cycle of high birth rates.

The SOCIAL factor most effective in breaking the cycle of high birth rates is female empowerment. While some countries have instituted anti-natalist policies like China’s one-child policy this has not always been successful. Rather, when women have more educational and economic opportunities outside the home, societies have seen a decrease in the crude birth rate.

1. **Answer the following questions using the graphs below and your knowledge of the Malthusian theory.**
2. Utilizing graph #1, DESCRIBE Malthusian Population Theory.

(this was the graph where the color of the lines were switched) According to Malthus, population growth (represented by the line with exponential growth) will outstrip the supply of food (represented by the line with the straight slope.) In this case the food line is the carrying capacity. Malthus proposed this theory during the Industrial Revolution in Britain and urged upper-class citizens to exercise moral restraint in order to get the birth rate under control.

1. According to Malthus, DESCRIBE what is represented at the star in graph #2.

According to Malthus, the star represents the effect of population exceeding carrying capacity. At that point, Malthus predicted that there would be a correction. This correction would be in the form of war, famine or disease that would bring population down below the carrying capacity as reflected in the downward slope of the red line beginning where the star is.

1. In graph #3, DESCRIBE a government strategy (as represented by the star) that may have been employed.

A government strategy that could keep the population (red line) under the carrying capacity (blue line) would be an anti-natalist policy. An example of an anti-natalist policy is China’s one-child policy. In 1979, China mandated that couples only have one-child in order to bring their population growth under control. They did through various incentives and punishments, such as the reward of government jobs and housing subsidies or through more coercive actions like forced abortions.

1. DESCRIBE the population theory represented by graph #4.

The population theory expressed by graph #4 is anti-Malthusian. Anti-Malthusians, such as Ester Boserup, believe that increased population leads to increased food production and therefore a society’s carrying capacity will be adjusted upward (the blue line) to meet its population growth. Other examples of this approach would be the Green Revolution in which due to adoption of Western farming techniques (better irrigation, more mechanization, using chemical pesticides and fertilizers, and the introduction of GMOs) that the production of food outpaced the growth in population during the last several decades of the 20th century.

1. EXPLAIN a criticism that a neo-Malthusian would have of graph #4.

A neo-Malthusian adheres to the basic premise of Malthus’ argument but believes it needs to be updated. They would argue that although food supply has kept pace with population globally, some parts of the world where population growth is highest are the least able to increase their carrying capacity. In addition, they would argue, that population is in danger of exceeding the carrying capacity of other resources besides food, such as water and energy. For example, in India the implementation of the Green Revolution strategy has increased the food supply but greatly taxed the available water supply. Neo-Malthusians would argue that, due to this, that the perceived success of the Green Revolution is still undetermined.

1. **Answer the following questions using the population pyramids and your knowledge of the demographic transition.**
2. IDENTIFY the stages of the demographic transition represented by pyramids X, Y and Z.

According to the demographic transition model, pyramid x would be stage three, pyramid y would be in stage five and pyramid z would be in stage two.

1. For pyramid X, EXPLAIN how this population structure was created.

The country represented by pyramid X would have achieved that shape of pyramid because it has had success in bring down its crude birth rate. You can see this from the flattening of the sides of the pyramid meaning that the pyramid is approaching replacement rate. Most likely this this society achieved this through increased economic development and urbanization where children are no longer viewed as economic assets or where women are achieving some empowerment and choosing to have less children because they have increased educational and economic opportunities.

1. For pyramid Z, EXPLAIN how this population structure was created.

The populations structure for pyramid Z was created because this society is either in the early stages of industrialization or the recipient of medical advancements. In an industrializing country, death rates decline because of better food supply, urbanization (access to medicine). The decline in the death rate would transition that country into stage two where they would experience a decline in the death rate but not a decline in the birth rate causing a high youth dependency. In addition,

1. For pyramid Y, DESCRIBE two distinct socioeconomic problems that arise from this population structure.

In pyramid Y, this population structure is in stage five of the demographic transition.

One socioeconomic problem that may arise from this structure is that this society has an extremely aged dependency ratio. This means the society has to expend a great deal of its wealth in caring for its elderly population children in the form of medical care, pensions and long-term nursing care and assisted living. This might put a strain on a country’s resources to pay for these costs.

Another socioeconomic problem that could arise form this population pyramid is that, in the near future, this society will not have enough young people to fill its work force. If there are not enough young people in fill jobs this society may go into economic decline. Their economy will shrink requiring them to borrow money. This has happened in Japan since the 1990s where their aging population has led to a stagnant or shrinking economy.

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