

### The Numbers Game

In 1994, the United Nations held its third Conference on Population and Development in Cairo, Egypt. One of the conference's goals was to encourage action to stabilize the world's population at 7.8 billion by 2050 instead of the projected 9.3 billion. As an advisor to the United Nations, you are going to analyze current population trends of a cross-section of countries representing each of the four major types of population pyramids and make recommendations as to how the UN can achieve its goal through specific population-related actions. Alternatively, if you do not agree with the UN's goals, you will present and substantiate a goal and develop recommendations to achieve that goal.

	<b>Novice</b>	<b>Apprentice</b>	<b>Practitioner</b>	<b>Expert</b>
<p><b>Study of Nations</b></p> <p>Twelve countries (three of each that represent slow growth, negative growth, rapid growth, and zero growth)</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Includes a study of the demographics (birth rate, death rate, TFR, replacement level fertility)</li> <li><input type="checkbox"/> Includes population pyramids (past, present, future)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Includes a study of the demographics (birth rate, death rate, TFR, replacement level fertility)</li> <li><input type="checkbox"/> Includes population pyramids (past, present, future)</li> <li><input type="checkbox"/> Identifies factors that affect the birth rate and death rate in countries studied</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Includes a study of the demographics (birth rate, death rate, TFR, replacement level fertility)</li> <li><input type="checkbox"/> Includes population pyramids (past, present, future)</li> <li><input type="checkbox"/> Identifies factors that affect the birth rate and death rate in countries studied</li> <li><input type="checkbox"/> Identifies parallels between population growth patterns and social, political and/or economic issues in countries studied</li> <li><input type="checkbox"/> Identifies parallels between population growth patterns/demographics and environmental issues in countries studies</li> </ul>	<p>Practitioner plus:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Includes a study of geography of population distribution (urban vs. rural, etc.)</li> </ul>
<p><b>Recommendations: Population Demographics and Predictions</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Recommendations based on analysis of demographics and population pyramids</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Recommendations based on analysis of demographics and population pyramids</li> <li><input type="checkbox"/> For each recommendation, shows current pyramid</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Recommendations based on analysis of demographics and population pyramids</li> <li><input type="checkbox"/> For each recommendation, shows current pyramid and predicts how pyramid will change based on each recommendation</li> <li><input type="checkbox"/> For each recommendation, predicts unintended consequences that may result</li> </ul>	<p>Practitioner plus:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Uses Stella modeling software to show change in population demographics that may occur as a result of recommendations OR</li> <li><input type="checkbox"/> Recommendations factor in impacts of expanding urban environments</li> </ul>

### The Numbers Game (continued)

<b>Recommendations: Problems/Events</b>	<input type="checkbox"/> For each recommendation, predicts problems/events that could alter predicted shift in pyramid	<input type="checkbox"/> For each recommendation, predicts problems/events that could alter predicted shift in pyramid <input type="checkbox"/> For each possible problem/event, identifies primary effects	<input type="checkbox"/> For each recommendation, predicts problems/events that could alter predicted shift in pyramid <input type="checkbox"/> For each possible problem/event, identifies primary, and secondary effects <input type="checkbox"/> Differentiates between obvious/subtle effects of problem/event <input type="checkbox"/> Devises strategies to deal with problems/events identified	Practitioner plus: <input type="checkbox"/> For each possible problem/event, identifies tertiary effects
<b>Presentation of Recommendations</b>	<input type="checkbox"/> Two or more minutes over or under the three minute goal <input type="checkbox"/> Presenters identify overarching goal	<input type="checkbox"/> Up to two minutes over or under the three minute goal <input type="checkbox"/> Presenters identify overarching goal <input type="checkbox"/> Presentation highlights major recommendations	<input type="checkbox"/> Presentation within 15 seconds of a three-minute goal <input type="checkbox"/> Presenters identify overarching goal <input type="checkbox"/> Presentation highlights major recommendations <input type="checkbox"/> Presenters reference supporting charts and graphs <input type="checkbox"/> 3-5 page report of supporting charts and graphs	Practitioner plus: <input type="checkbox"/> Presenters identify how goals relate to UN goals
<b>Population Forum (Participation)</b>	<input type="checkbox"/> Poses questions that relate to other group's content	<input type="checkbox"/> Poses questions that challenge data of other group	<input type="checkbox"/> Poses questions that challenge another group's recommendations <input type="checkbox"/> Rebuts and substantiates challenges from other group <input type="checkbox"/> Openness to re-think position based on opponents arguments	Practitioner plus: <input type="checkbox"/> Poses a question that raises an issue that is not addressed by other group's presentation
<b>Time Management</b>	<input type="checkbox"/> Student needs occasional reminders to stay on task, <80% of task time is spent on productive tasks	<input type="checkbox"/> Student needs occasional reminders to stay on task, approximately 80% of class time is spent on productive tasks	<input type="checkbox"/> Student is focused on the task, utilizes task time well, demonstrates evidence of sharing information with colleagues, no reminders to stay on task	Practitioner plus: <input type="checkbox"/> Student leads the group in search for knowledge about the topic

## Essential Learnings:

- Factors affecting population growth rate: *birth rate, death rate, emigration rate, and immigration rate*
- Replacement-level fertility and total fertility rate
- Connections between population growth and environmental degradation
- Infant mortality rate* as an indicator of quality of life
- Rates of population growth in developed countries and developing countries
- Population age structure diagrams, age structure and population growth momentum
- Key factors used to influence population size: immigration policy, family planning, economic rewards and penalties, empowering women
- Four stages of the demographic transition
- Social, biological, political, and economic issues that can be addressed to help developing countries undergo a demographic transition.
- Factors that may limit the effectiveness of a demographic transition in influencing population size
- Comparison and evaluation of population policies
- Major goals of the UN Conference on Population and Development

US Census Bureau—International Data Base <http://www.census.gov/ipc/www/idbnew.html>

World Population Data Sheet [http://www.prb.org/Template.cfm?Section=PRB&template=/Content/ContentGroups/Datasheets/2003\\_World\\_Population\\_Data\\_Sheet.htm](http://www.prb.org/Template.cfm?Section=PRB&template=/Content/ContentGroups/Datasheets/2003_World_Population_Data_Sheet.htm)

United Nations Population Fund [www.unfpa.org](http://www.unfpa.org) (Kory, thank you for this link!)

New Jersey Core Curriculum Content Standards - Science 5.1A, 5.2A, 5.3C, 5.3D, 5.10B